

SPACE WORLD

The news magazine of Astro - Science

Covers from

May 1960 to December 1988



First Issue - May 1960



Last Issue - December 1988

Table of Contents

Space World, appearing in May 1960 was edited by Otto Oscar Binder, a science fiction author, but best known for producing hundreds of super-hero Marvel comic books dating from World War II. The comic book profits he invested in "Space World" were lost as "the public stayed away from it in droves". Losing money, Binder and his partners were forced to declare bankruptcy and sell the magazine to Ray Palmer in 1963. Editor of the successful science fiction magazines "Amazing Stories" and "Fate", Palmer was able to successfully continue Space World for the next 25 years.

The final Space World issue was December 1988.

From May 1960 to December 1988, there were 313 Space World magazines issued. (Plus, one *Jets and Rockets* magazine which was sent to subscribers in place of the August 1962 issue.)

PDF Page	PDF Page
1960 3-7	1975 80-83
1961 8-17	1976 84-87
1962 18-29	1977 88-91
1963 30-35	1978 92-95
1964 36-39	1979 96-99
1965 40-43	1980 100-103
1966 44-47	1981 104-107
1967 48-51	1982 108-111
1968 52-55	1982 112-115
1969 56-59	1984 116-119
1970 60-63	1985 120-123
1971 64-67	1986 124-127
1972 68-71	1987 128-131
1973 72-75	1988 132-135
1974 76-79	

SPACE **WORLD**

1960

MAY 50¢

SPACE WORLD

The news magazine of Astro-Science

There's a
SPACE JOB
FOR YOU

WERNHER von BRAUN:
"I Reached for the Stars"

WILLY LEY
John R. Pierce
Isaac Asimov
M. Vassiliev

The RUSSIAN SIDE
of the MOON

Luniks' new facts
explode old theories



JULY 50¢

SPACE WORLD

The news magazine of Astro-Science

THE NEXT 10 YEARS
IN SPACE TRAVEL

How to get a
FREE Science Education

Krafft Ehricke • John R. Pierce • Willy Ley • Norman Lee Barr

SPACE WORLD

The news magazine of Astro-Science

SENATOR STUART SYMINGTON

T. Keith Glennan

Willy Ley

O. O. Binder



AMATEUR ROCKETRY: Good or Bad?

YOUR AIR FORCE SPACE CAREER

NOVEMBER 50c

SPACE WORLD

The news magazine of Astro-Science

TO MARS—AND BEYOND
The exciting story of Project Parsecs

WERNHER VON BRAUN

KRAFT EHRLICHE

WILLY LEY

WELLWOOD BEALL

Orbiting with the FIRST ASTRONAUT • America's SPY SATELLITES

SPACE **WORLD**

1961

JANUARY 50c

SPACE WORLD

The news magazine of Astro - Science



SPECIAL ISSUE

Complete story of the
Great Adventure—

MAN IN SPACE

THE
FLIGHT OF THE
FIRST
ASTRONAUT

Ray Bradbury
Major Victor Hammond
Willy Ley

SPACE WORLD

MARCH 50c

The news magazine of Astro - Science

K

TESTING OUR
ROCKET ENGINES



GEN. MEDARIS: Right or wrong?

'FLYING SAUCER' PHENOMENA

First authentic USAF lunar map

HOW WE'RE MAPPING THE MOON

SPACE WORLD

APRIL 50c
VOL. 1, NO. 7

The news magazine of Astro - Science



▶ **Wings Into Space**

▶ **Nuclear Powered Rockets**

▶ **Life in a Missiletown**

▶ **Techniques of Space Refueling**

▶ **Establishing a Lunar Colony**

CAPT. ROBERT WHITE
PILOT OF THE X-15

Willy Ley • Hugh Dryden • John W. Clark • Charles E. Kaempfen

SPACE

WORLD

JUNE 50c
VOL. 1, NO. 8

The Magazine of Space News

- ▶ The Russian Venus Probe
- ▶ Can Man Survive in Space?
- ▶ America's New Super Rocket
- ▶ Engineering a Mars Colony
- ▶ Dr. Wm. Helvey: Space Medic
- ▶ A New Approach to Telemetry

FINAL CHECK-OUT

20 12 01 10 10 10 10

Wernher von Braun

John Parry



SPACE

AUGUST 50c
VOL. 1 NO. 9

WORLD

The Magazine of Space News

**EXCLUSIVE - A Russian scientist reports on
THE SOVIET MAN IN SPACE**

**A list of every rocket shoot ever made
WILLY LEY'S COMPLETE ASTRO-CALENDAR**



Alan Shepard



Virgil Grissom



John Glenn

**THE FULL STORY:
HOW OUR SPACEMEN
ARE CHOSEN**



SPACE WORLD

SEPT 50c
VOL. 1 NO. 10

The Magazine of Space News

NEXT STEP: MANNED
ORBITAL FLIGHT

Dandridge Cole

Robert R. R. R.

Robert R. R. R.

Robert R. R. R.

A Noted Russian Astronomer Reports:
THERE IS INTELLIGENT LIFE ON MARS!

261
ORD AVE

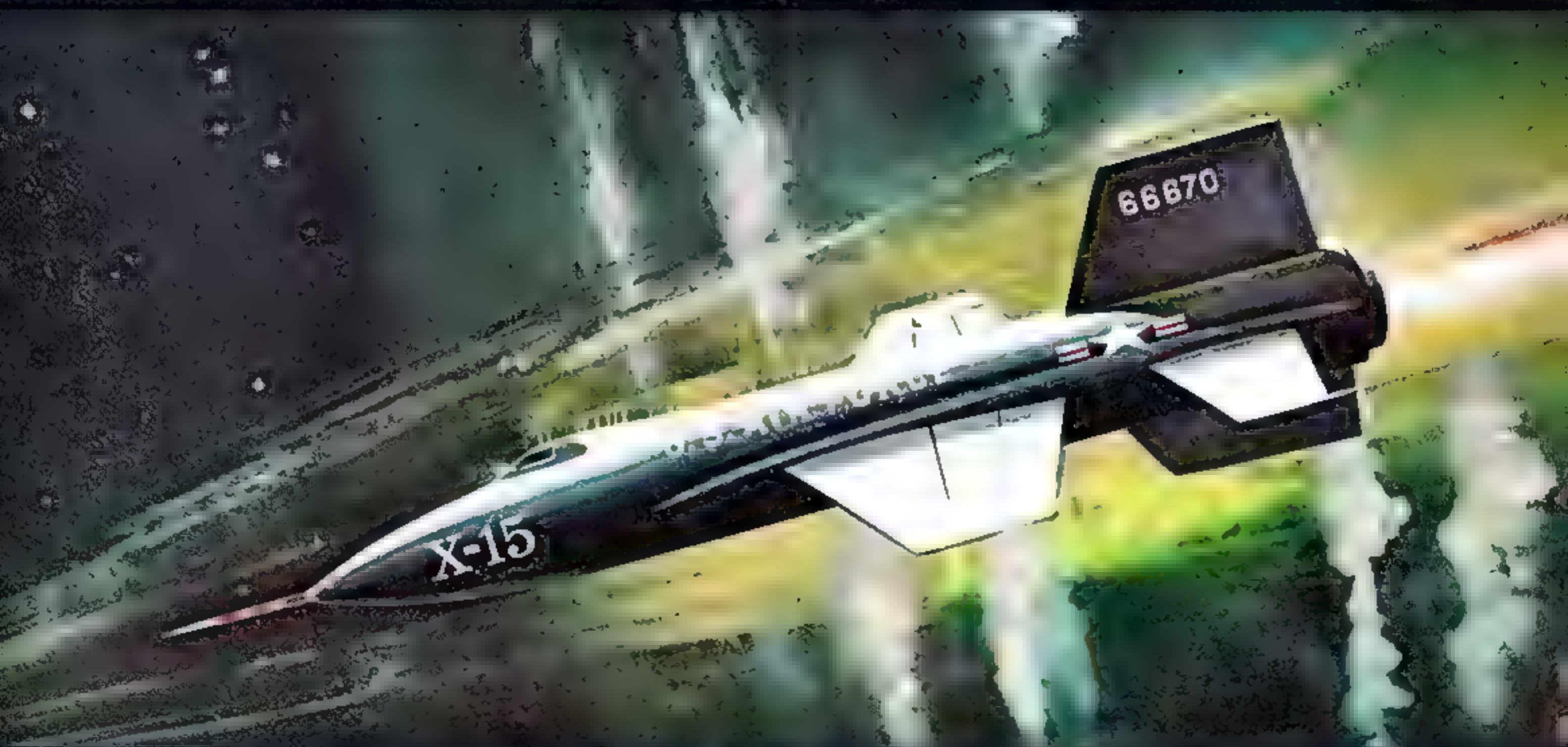
OCTOBER 50c
VOL. 1 NO. 11

SPACE WORLD

The Magazine of Space News



40 BILLION DOLLARS - Is President Kennedy throwing it away
trying to put American men into space?



WILLY LEY REVEALS THE FULL STORY-

The Russian 'Murders' In Outer Space

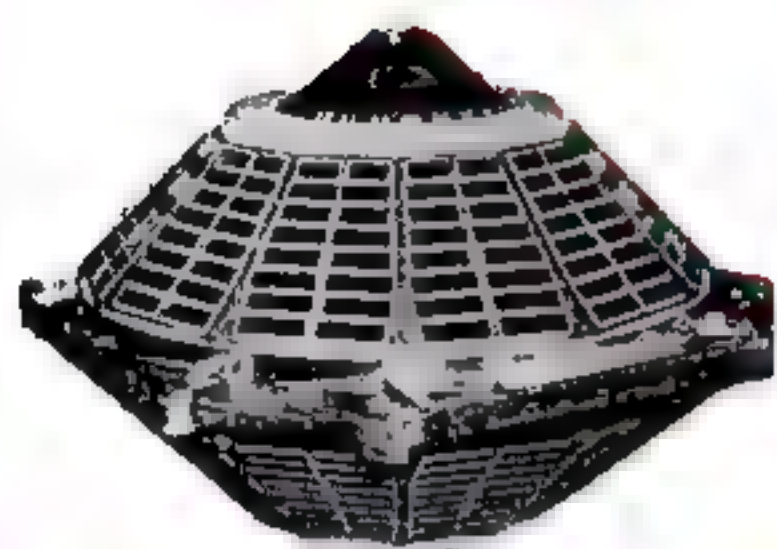
SPACE WORLD

NOVEMBER 50¢

The Magazine of Space News

Special 20-page feature: The full story of America's

RACE



INTO



SPACE

A complete illustrated guide to rockets, missiles
and spacecraft of the U.S.A.

Many facts and photos specially declassified.

A reference work unsurpassed in scope and coverage.

LIFE ON THE MOON? • ROCKET MAIL • REPORT FROM RUSSIA

DECEMBER 50¢

SPACE WORLD

The Magazine of Space News



Alan Shepard



Virgil Grissom



Yuri Gagarin



Gherman Titov

**A SPECIAL ISSUE
PREPARED IN COOPERATION
WITH THE UNITED STATES AIR FORCE**

MEN IN SPACE

- Are the Russians really ahead?
- Training the Dyna-Soar pilots
- The Danger Zone in outer space
- What's next in Space Travel

SPACE WORLD

1962

SPACE

JANUARY 50¢

WORLD

The Monthly Magazine of Space News

**EXCLUSIVE! How It Felt To Ride The Vostok Into Space:
GHERMAN TITOV'S OWN STORY!**

IN THIS ISSUE:

- How They Catch Satellites In The Sky
- Willy Ley's 4-Page Newsletter
- NASA's Five-Year Plan
- Your Life On The Moon

Actual photo of Earth
taken by Titov on
August 6, 1961.



SPACE WORLD

FEBRUARY 50c

The Monthly Magazine of Space News



WAR IN SPACE
CAN AMERICA WIN IT?

SPACE

MARCH \$50

WORLD

THE MAGAZINE
OF SPACE NEWS

**Astronaut's Report:
'HOW WE TRAINED FOR ORBITAL FLIGHT'**



LIEUTENANT COLONEL
JOHN H. GLENN

SPACE

MAY • 50c

WORLD

THE MAGAZINE
OF SPACE NEWS

The Truth About Khrushchev's Boasts: IS SOVIET SPACE SCIENCE FIVE YEARS AHEAD?



- Can Russian missiles really destroy America?
- Will the Moon be a Russian colony?

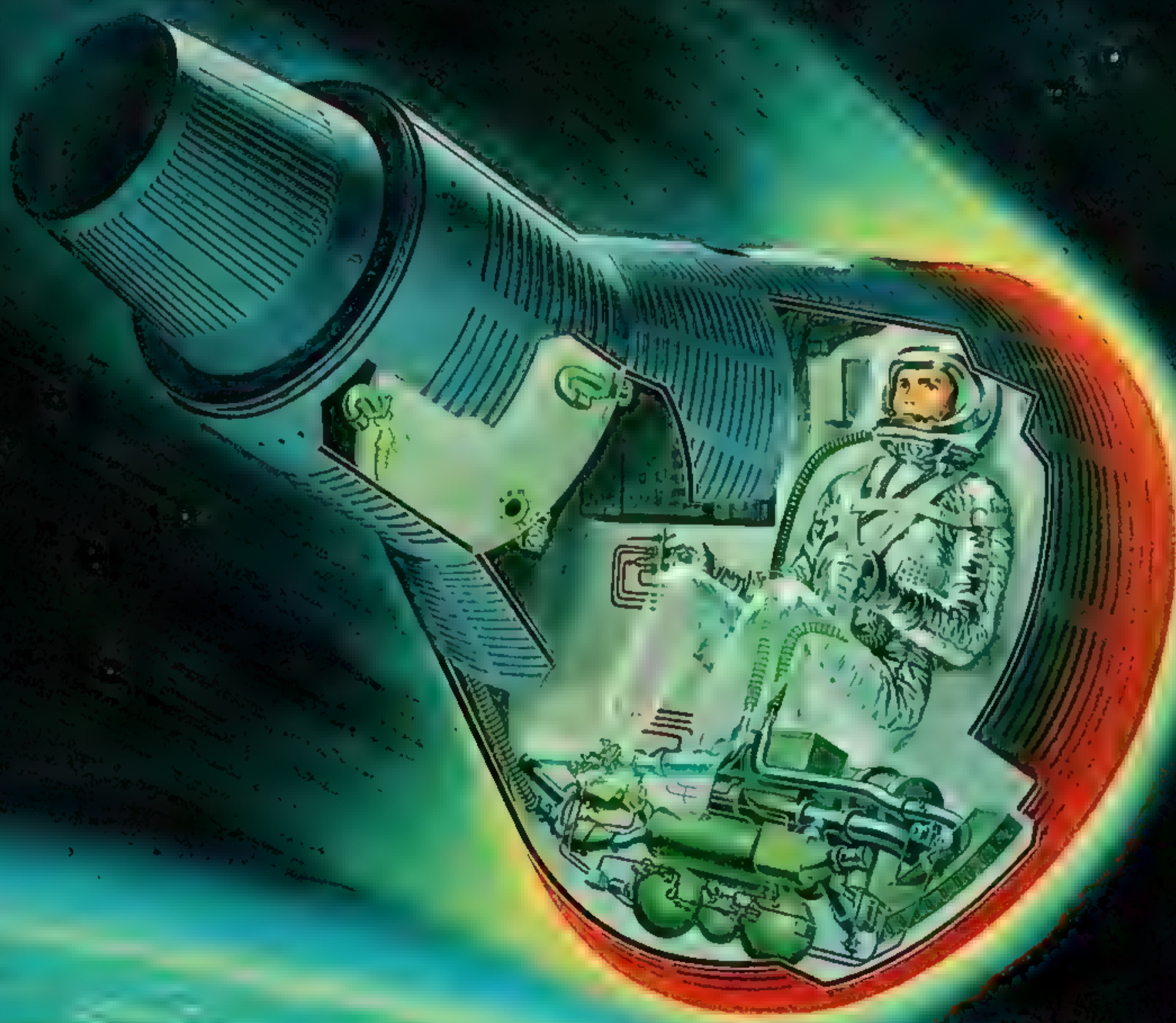
SECOND ANNIVERSARY ISSUE!

SPACE

JULY • 50

WORLD

Our next step: 18 TIMES AROUND THE EARTH



SPECIAL JETS & ROCKETS SECTION

- **U-2 Pilots: The lonely heroes**
- **Are manned Jet Bombers obsolete?**
- **The Frogmen who save our Astronauts**

50¢ AUGUST 1962

JETS AND

ROCKETS



I Flew The X-15 To The Edge Of Space, By Major Robert White

**REVEALED—THE STRANGE SECRET OF RUSSIA'S
NEW SPACE PLANE • THE JETS THAT CHASE
OUR MISSILES • BIG NEWS ABOUT DYNA-SOAR**

***NOTE: There was no August 1962 Space World magazine issued.
This issue of Jets and Rockets was sent to subscribers instead.**

A MESSAGE TO
SPACE WORLD SUBSCRIBERS

THERE IS NO AUGUST ISSUE OF SPACE WORLD MAGAZINE. THE PUBLISHER OF SPACE WORLD HAS MADE ARRANGEMENTS FOR THIS PREMIER ISSUE OF JETS AND ROCKETS MAGAZINE TO BE SENT TO YOU IN ITS PLACE. WE KNOW YOU WILL ENJOY JETS AND ROCKETS WHICH IS EDITED AND WRITTEN BY MANY OF THE SAME PEOPLE WHO HAVE BECOME SO WELL KNOWN TO YOU IN THE PAGES OF SPACE WORLD.

SPACE WORLD

Vol. 3, No. 4

Second class postage paid at New York, N.Y.

OCTOBER 1962

COMPLIMENTARY COPY

You have been chosen to get this complimentary copy of SPACE WORLD because we know that you are interested in the challenge of space.

In SPACE WORLD you will find the whole dynamic story of rockets, satellites and spacecraft - the fabulous machines and outstanding men behind them - brought to you in format designed for readers who want dramatic, authoritative and complete coverage of the spaceman's world - AS IT HAPPENS. From tense moments during a countdown at Canaveral through the triumph of vehicles placed into orbit, on into the reaches of space, SPACE WORLD brings you everything that happens.

In addition to all the latest news on the space front, SPACE WORLD will feature in every issue invaluable career aids for students, graduates and technicians. Tips about jobs and trends, and news of clubs and other organizations whose work offers stimulation and encouragement for those who want a career in this immense industry of space. A subscription is on page 11 for your convenience.

LETTERS

Dear Sir: I have my first copy of SPACE WORLD in newspaper format and I thought I would let you know that you have my continuing support. I've always found your articles and features most interesting and I expect they will be even MORE INFORMATIVE in this UP TO DATE form. Norman H. Vaneas, Bristol, Conn.

Dear Sir: While reading the Sept. 1962 issue of SPACE WORLD, my attention centered on a mistake in the NASA launching schedule. Ranger V will be launched from Cape Canaveral, as were its four predecessors, not from PMR. In turn, Echo II, unlike Echo I, will be launched into polar orbit from the PMR. Still, let me say that in whatever form SPACE WORLD is printed it is a great help in clarifying many areas of our space program. The newspaper is fine with me. Alan B. Metzger, Smithsburg, Md.

(The two listings for Ranger and Echo were inadvertently switched. Glad you feel the true value of what we turn out is not in PAPER OR INK... but in DATA AND INFORMATION... on which the new SPACE WORLD holds up its head proudly before the old.....Ed.)

Dear Sir: Your announcement that SPACE WORLD will no longer be issued as a magazine is a disappointment to me in that I was having them bound in book form from year to year. But I can also understand your position. Your scientific coverage is STILL THE BEST there is to be had. I will still support you and am sending \$5.00 for a renewal of SPACE WORLD. Stanley S. Kendall, Morton Grove, Ill.

(Newsprint can also be bound and

protected in plastic film. Inquire at your stationers. Many thanks for your continued support.....Ed.)

Dear Sir: I thought I had obtained all copies of your unbreakable magazine from the start but in checking over my files recently, I discovered several missing. Are back issues available? How far back? At what price? Roger Hamelt, Clear Lake Highlands, Calif.

(We have been overwhelmed with similar requests for back issues of SPACE WORLD. For the benefit of all readers, here is a list of those back issues that are available: October 1961
November 1961
January 1962
February 1962
March 1962
April 1962
May 1962
July 1962

Some of these issues are in small quantities, and are available on a first come, first served basis. Please send fifty cents to cover handling, mailing and cost of each magazine to Space World, 570 Fifth Avenue, New York 36, N. Y. Note: When ordering, state MONTH AND YEAR.)

Dear Sir: I wish to correct an error you made in your September issue of SPACE WORLD. You identified Arthur C. Clarke as John R. Pierce and vice versa. I am a great fan of both and was very glad to see them mentioned in your magazine. Ida Lee, Youngstown, Ohio. (Our theory is that the captions were switched during an overpass of Television. Well, it does everything else.

Dear Sir: On the weekend of the

PRESIDENT PLEDGES SPACE WIN

During his recent four-day tour of Cape Canaveral, the Senior works at Huntsville, the Houston Moon Center and other space facilities, President John F. Kennedy renewed his resolve to lead the American people to first place in space. This is clear from these excerpts out of a speech delivered at Rice University on September 12:

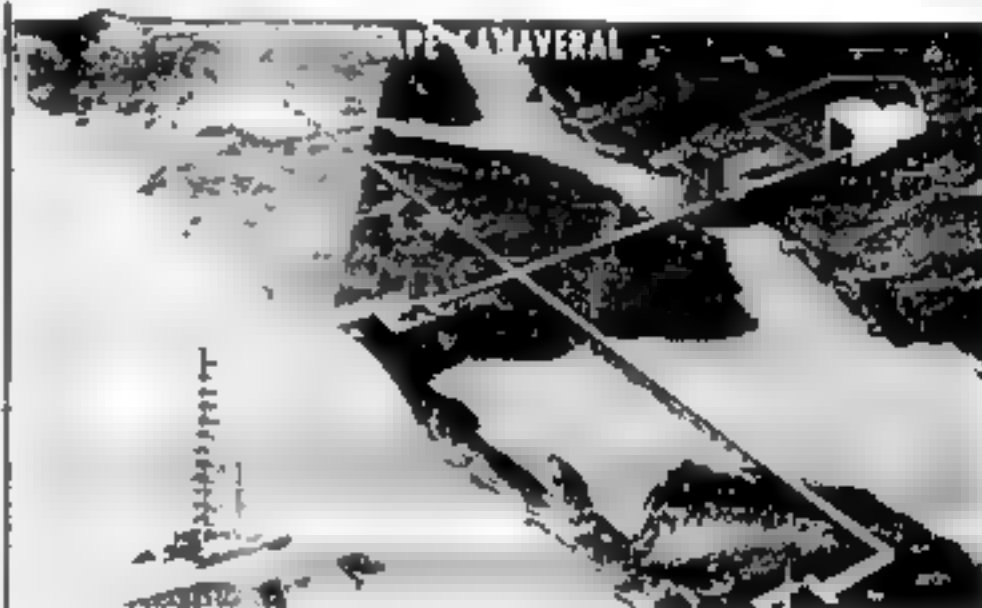
"The exploration of space will go ahead whether we join in it or not, and it is one of the great adventures of all time, and no nation which expects to be the leader of other nations can expect to stay behind for space.

"Our generation does not intend to founder in the backwash of the coming age of space. We mean to be a part of it - we mean to lead it. For the eyes of the world now look into space to the moon and to the planets beyond - and we have vowed that we shall not see it governed by a hostile flag of conquest, but by a banner of freedom and peace.

"But why, some say, the moon? Why choose this as our goal? And they may well ask why climb the highest mountains? Why 35 years ago fly the Atlantic? Why does Rice play Texas?

"We choose to go to the moon in this decade, and do the other things not because they are easy, but because they are hard; because that

But many experts are privately predicting that the total figure may go beyond \$8,000,000,000 - particularly if Russia pulls a successful orbit rendezvous maneuver



Future site of moonship launch is shown in this artist's projection of facility at Cape Canaveral. Building plans call for completion of complex in less than two years.

goal will serve to organize and measure the best of our energies and skills.

"To be sure - to be sure, we are behind and will be behind for some time in manned flights but we do not intend to stay behind and in this decade we shall make up and move ahead.

"What was once the furthest outpost on the old frontier of the West will be the furthest outpost on the new frontier of science and space.

"Many years ago the great British explorer George Mallory, who was to die on Mount Everest, was asked why did he want to climb it. He said:

"Because it is there. Well, space is there, and we're going to climb it. And the moon, and the planets are there, and new hope for knowledge and peace are there. And therefore, as we set sail, we ask God's blessing on the most hazardous and dangerous and greatest adventure on which man has ever embarked."

To back up his promise, it is reliably reported that JFK plans to raise the space budget from fiscal 1963's \$5.4 million to at least \$7 million in Feb. 1964. This would divide up to give NASA about five billion and the USAF two billion.

or some other important space feat before the end of 1962.

This may also change the proportions between NASA and USAF space funding. Any Soviet space "first" that carries a possible military threat to America in the future would blow the lid off the NASA-USAF rivalry for control of our long-range space program, a controversy that had been simmering on the back burner ever since Gagarin's first manned flight and reached a boil when the cosmonaut went almost kept a tryout in space last month.

Rendezvous can lead to an orbital platform soon after. An orbital platform can become a way-station to the moon... OR a multi-man MILITARY SPACE BASE circling earth daily, and crossing America at least four times each 24 hours. The latter has obvious implications - surveillance, patrol, even domination of earth and space - that worry the USAF, which is why they continue their campaign for a stronger space role. The issue may be decided not by what they think in Washington but what they think - and do - in Moscow. Any Soviet space move from now on could be the fuse that sets off the USA space program powderkeg.

1953 POLL

In the summer of 1953, Gerry de la Ree, (science-fiction fan and feature writer for New Jersey BERGEN EVENING RECORD) conducted a "space prophecy" poll among experts and science-fiction writers of 1953. The time was four years before Sputnik, in the period when the ICBM was still a controversial missile sometimes pronounced "ridiculous." The largest boosters known in America were captured V-2's of 56,000 pounds thrust and the native Viking with 20,000 pounds of thrust. The 200,000-pound thrust of the early Navaho (jet-powered ICBM) missile was only being tested.

The Jupiter, Juno, Atlas, Thor, Titan were all gleams in rocketmen's

(NASA, please note.....Ed.)

SPACE WORLD

Volume 3, No. 6

Second Class Postage Paid At New York, N.Y.

DECEMBER 1962

IN THIS ISSUE
DEATH RAY DEFENSE
COLD SHADOW OF THE MOON
RUSSIAN SCIENTIST'S PLEA
FREE! AEROSPACE ITEMS

SATURN FACES BOOSTER BOTTLENECK

A week before Thanksgiving, Americans were given something to be truly thankful for in our space program -- the third flawless flight in the Saturn C-1 booster test series. Like SA-1 in October 1961 and SA-2 in April of this year, the SA-3 (flight code) of November 16th was "101%" perfect.

This could hasten the present timetable for SA-4 (fall, 1963) and SA-5 (spring, 1963) except for one thing -- no second stage is ready.

One can picture the ridiculous -- and tragic -- situation of rusting Saturn boosters waiting all in a row while a lackadaisical upper-stage program belatedly produces its first workable hardware. This is no reflection on Douglas, prime contractor for the S-IV second stage. The blame falls squarely on NASA's experts in inspecting timetabling of what goes on top of its mighty booster. They failed to realize that with some 1,500 operational rocket shots behind them (including German V-2's), Werner von Braun's engineering team would hardly stumble with the Saturn. After all, it's just a bigger rocket but running on the same fuel and utilizing the same technological techniques of gyro-guidance, gimbaled-engine stabilization and all such well-proven gimcracks.

Though generally quick to defend others, von Braun, when interviewed after the last flight of the Saturn, said that the S-IV stage was a "bottleneck." The Saturn C-1's second stage will burn liquid hydrogen fuel in its six RL-10 engines of 15,000 pounds thrust each -- the same as the two motors in the ill-starred Centaur that is now two years behind schedule. If the Centaur's bugs crop up to plague the S-IV, then Block #2 of the two-block (two-stage) C-1 will truly "BLOCK" our manned spaceflight program.

For the Saturn C-1 is scheduled to first launch the 3-man Apollo craft into earth-orbit tests, leading to the later moon flights. A late S-IV means a late Apollo-A, which means a late Apollo-B circumlunar flight, which means a late Apollo-C moon touchdown. Thus, the chain of disaster tracing from one weak link in our big booster project can snatch away the Moon Prize in the Space Race.

Getting back to a more pleasant topic, the Saturn #3 flight not only exceeded all expectations but tossed in two unexpected bonuses:

- A "roll" motion of 4° per second developed just before end of the powered phase, allowing tracking engineers to find the best propagation (beam) angle for the booster's telemetry antennas. This also proved out the "and-a-josh" system of the propellant tanks.
- After deliberate blow-up of the booster at its peak height, five of the 27 telemetry links continued transmitting for several minutes. The canister in which they were contained had evidently departed in one piece. This telemetry data is giving valuable information on thin-air concussion effects at high altitudes -- something totally unknown before.

But the best windfall, of course, was simply the superb performance of the booster in flight. Unbelievably the Saturn with its eight H-1 (Redstone) engines is more reliable than the single Redstone itself. Some experts are advising NASA to skip time-wasting and redundant interim shots and schedule SA-5 to be operational instead of SA-11. The time saved would be 6 months or more.

But to what avail, with no second-stage? However, the trick is simply to use the Saturn as a ONE-STAGE launch vehicle, as the Atlas has been used in Mercury landings. The 2-man Gemini craft, for instance, could be orbited by the solo Saturn. Furthermore, Saturn could hurl a ton-weight probe to Mars or Venus, comparable to the 1,970-pound Mars vehicle Russia launched last November 1. This would superbly beef up our flimsy planet probe program which, because of Centaur's failures, has had to be relegated to the featherweight lifting capacities of the Atlas-Agena -- payload to planets under 500 pounds. Giant craft 4 times heavier, flung away by the Saturn spacetrack, could contain heavy TV equipment and massive Soviet-style instrumentation. And the first shots -- non-manned rating coming sooner -- could advance the date of far-planet probes to Mercury, Jupiter and Saturn to late 1963 instead of waiting for the operational (perhaps) Centaur in 1965.

Obviously, the late-wolf Saturn booster could shove our general space program ahead in mighty leaps. Will NASA seize this miraculous opportunity? Or insist on following its step-by-plodding-step methods, and waste perfectly good payload-carrying Saturns in repetitive tests with dummy payloads? One would need courage to bet optimistically on their verdict.

The Mercury astronauts, insiders say, have privately stated that MR-3 and/or MR-4 (Mercury-Redstone suborbit flights of Shepard and Grissom) were unnecessary -- the Soviets skipped them entirely. And with any pushing, the orbital flights from MA-6 to MA-8 (Glen,

Carpenter and Schirra) could have been done six weeks apart instead of stretching out for a span of almost 8 months. In what is loosely called the manned flight "schedule," NASA has divided the distance of clock, calendar and common-sense triumphs.

Unable to hasten the launch-time schedule for his Saturns, von Braun and test crew nevertheless planned a unique experiment with the next SA-4 shot of 1963's first quarter. One of the eight H-1 engines will be deliberately made dead, so it doesn't fire with the other 7 at lift-off. The Saturn powerplant is engineered to take-off, and stay in balance, if one -- any one -- of the engines fails. Proof of this in an actual flight test will be another major landmark in booster technology.

From SA-3 on (late 1963), the Saturn C-1 will have two "live" stages (if S-IV is ready) and carry both people (two-man Apollo capsules) into orbit. The Saturn booster from flight #5 on will also produce its full programmed 1.5 million pounds thrust. The three shots so far (and the 4th coming up) were based on minimal H-1 thrusts of 165,000 pounds of push, which will be raised to 168,000 pounds each in the SA-5 vehicle and beyond.

During the racing #3 test and its 10-hour countdown, there was one hold of 45 minutes -- for a failure to QSE (Ground Support Equipment). Saturn #3 itself developed no mechanical ill at all and was waiting to go like a champion. It was like a super-champion and is sure to win gold medals in the Space Olympics events lying ahead.

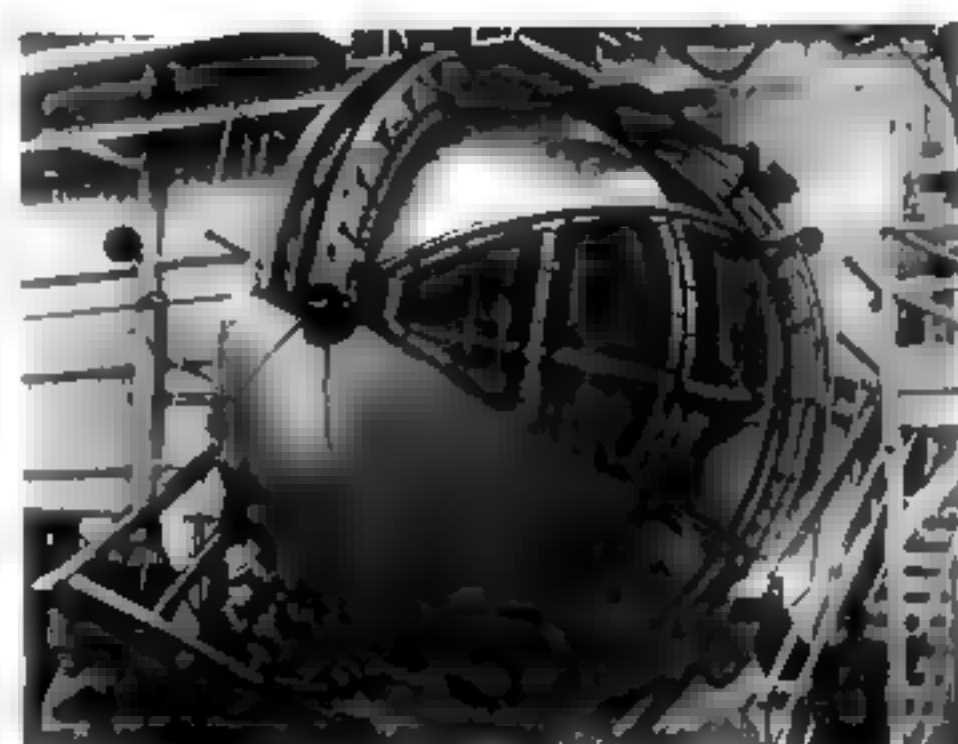


Photo shows tank of S-4 second-stage of the Saturn C-1 which will be powered by hydrogen-fueled J-2 engines. It will be operational in 1964.

SA-3 SATURN C-1 TEST FLIGHT DATA

Time: 12:45 EST, 16 November 1962. Lift-off weight: 1,086,000 pounds. Propellant weight (RP-1 and LOX): 750,000 pounds, or 130,000 pounds more than in SA-1 and SA-2. Booster diameter: 22' 6". Booster height: 125 ft. Vehicle height with dummy second stage: 162 ft. Burning time: 4 inboard engines 141 sec., 4 outboards 149 sec. Altitude reached: 104 miles. Speed: 4000 mph. Vehicle exploded at ground command: T plus 292 sec. Water ballast released: 95 tons (23,000 gallons).

Gemini program in danger

Crowded out for five frustrating years by two administrations from having a larger share in NASA's man-in-space program, the U.S. Air Force may finally get in by the budgetary "back door." Plagued by skyrocketing costs of its moon program, NASA is already overspent on fiscal-1963

Mercury/Gemini/Apollo manned flight program, and is apparently afraid to ask Congress to up the ante -- especially with a whopping \$7.8 billion deficit in the national budget this year.

James E. Webb, Chief of NASA, is publicly saying that NASA funding is not running out. But privately, insiders say, he knows that D. Bradner Holmes -- boss of the Apollo lunar program -- is right when he says they are at least \$400 million short on space money as of now. As a result, work has been seriously slowed down on the vital manned spaceflight program. This caused NASA to suggest cutting down the Gemini schedule from 14

to 6 flights only. The 2-man Gemini series was designed to fill the gap between the 1-man Mercury and 3-man Apollo flights.

The words were hardly out of NASA's mouth when the USAF, brandishing ample space funds (DOD hardly lets them spend it), offered to share the price -- at a price. Either give the USAF donor's stronger voice in the manned spaceflight program, or sell five Gemini capsules for the Air Force to use as it wishes.

What the final decision will be is unannounced as yet. But indications are that NASA's empty space pockets will give it little choice. All this,

of course, is a monotonous repetition of the civilian space agency's previous space sins ever since its formation in 1958 -- inability to estimate true costs of its future programs and a genius for planning "huckshot" projects that spread funds thin, instead of concentrating on a single goal with maximum intensity.

Much of NASA's money troubles, it is said, stem from poor contracting methods, unnecessary back up devices, too many unneeded "development" shots before declaring a vehicle operational, a plethora of "reviewing" committees who look in each project's mouth a dozen times before making a go-go decision, and an unbearable ability to turn out talkware in far greater quantities than hardware.

The limit of NASA's curtailing the Gemini program first brought genuine dismay to the USAF -- and for good reasons. They had specifically stated Gemini's goals -- perfecting orbital rendezvous and extending

continued on page 2



Werner von Braun

SPACE WORLD

1963

SPACE WORLD

Vol. 4, No. 1

Second Class Postage Paid At New York, N.Y.

January 1963

Mariner-2 Reveals Venus Secrets

The dawn sun was just struggling above the horizon at Goldstone Tracking Station in California, that morning of December 14, as the huge 86-foot antenna swung and locked itself with infinite care on an invisible target far off in deep space. A radio command crackled forth. Even at the great speed of 186,270 miles per second, the signals took over 3 minutes to reach their destination.

And with both earth plus target moving through space, this feat was comparable to hitting clay pigeons with a peashooter at 10,000 yards - beyond the horizon.

Thirty-six million miles away, a tiny man-made craft in the immensity of space picked up the beamed pulsations and signaled back the code for "I read you, Goldstone. Shifting from cruise-mode to encounter-mode. Sensors swinging toward Venus."

The time was 8:35 a.m. (EST), marking an historical SPACE FIRST. After traveling for 109.3 days over a total distance of 180.2 million miles, Mariner-2 had achieved its first operational flyby of a planet, passing within 22,000 miles of it, all its electronic gadgets humming and its instruments working. But before all this, the 42-minute scanning mission had been completed, while the lighting on Venus was most favorable. Here was the sequence in the afternoon of 14 December 1962:

- 1:55 P.M. Scanning begins. Most of Venus dark as Mariner passes below the planet at a distance of 25,262 miles. Probe's speed is 87,000 mph in solar orbit.

- 2:17 P.M. Vehicle passes directly over terminator, Venus half in sunlight, half in dark. Two radiometers continue scanning clouds and surface at rate of 1/10th degree per minute.

- 2:37 P.M. After 42 minutes, examination of Venus ends as Mariner's sensors cannot cope now with full solar radiation on dayside of Venus.

- 2:59:28 P.M. Closest approach of 21,394 miles over planet's bright side. Mariner's speed increased 1400 mph by Venus gravity to a new high of 88,400 mph.

- 3:20 P.M. At command from earth, Mariner returns to cruise-mode. Sensors switch back to charting interplanetary phenomena - solar magnetic field, charged particles from sun, interplanetary dust, and cosmic-ray counts.

- December 27, Mariner reaches its perihelion, or closest point to the sun - 65,505,935 miles.

- 30 March 1963. Maximum distance between Mariner and earth - 98,063,599 miles.

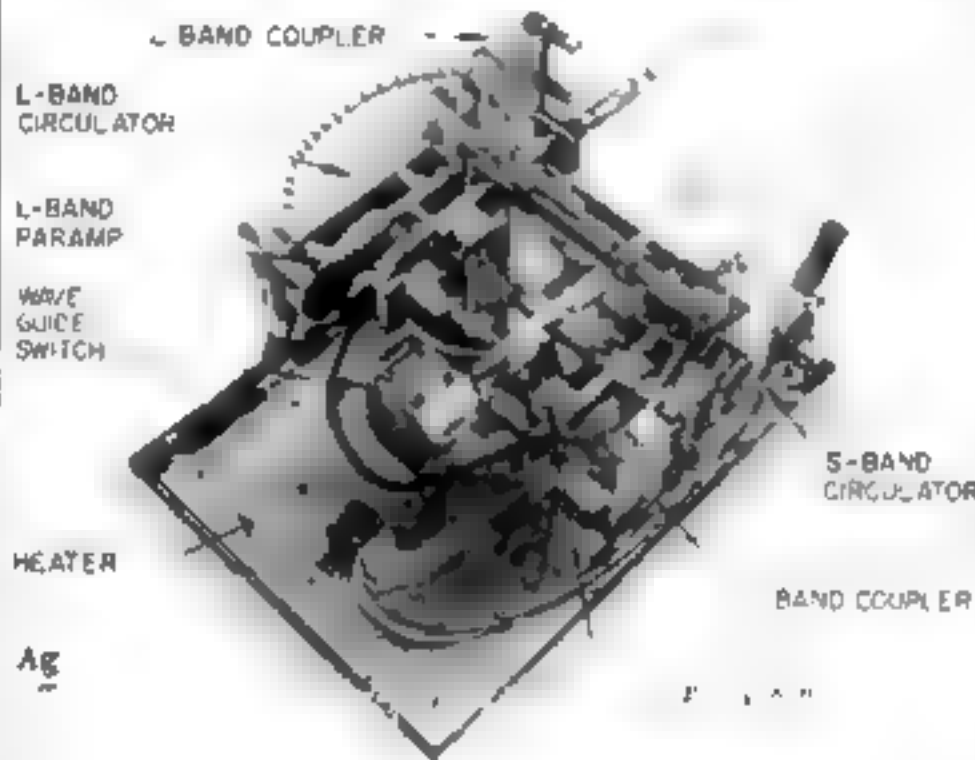
- 18 June 1963. Mariner will reach its aphelion at a distance of 113,813,087 miles from the sun. Since this is some 20 million miles further out than earth goes, Mariner will cross earth's orbit twice during each of its short-year periods of revolution around the sun, taking 345.9 days.

- 27 September 1963. Closest approach to earth - 25,765,717 miles. If Mariner's instrumentation is still working, Goldstone will attempt to make contact and ask for all the data it has accumulated for long months in its lonely journey out of reach of earth's radio receivers.

Scientists at Jet Propulsion Laboratory, which made the probe, were jubilant after all the telemetry code had been safely received and stored on tape for weeks of intense analysis. For a while, during the last month of their hardware's trip, it seemed

cosmic-rays during the trip from earth) sought out any "Van Allen Belt" of radiation which might be coiled around the planet's equator, as on earth.

The whole vehicle was the "instrument" for one wide experiment - testing the gravity-pull of Venus, which has previously been estimated roughly at 9/10ths of



Telemetry system shown here receives signals across 36 million miles of space, and represents deepest space penetration in history.

Mariner 2 scientific experiments

Experiments	Description	Experimenters
Microwave radiometer	Determine the temperature of the planet surface and details concerning its atmosphere	Dr. A. H. Barrett, Massachusetts Institute of Technology; Dr. E. Jones, MIT; Dr. J. Caplan, Army Ordnance Missile Command; Dr. A. E. Libby, Harvard College Observatory
Infrared radiometer	Determine any fine structure of the cloud layer	Dr. I. D. Kaplan, MIT and University of Nevada; Dr. G. Neugebauer, JPL; Dr. C. Sagan, University of California, Berkeley
Magnetometer	Measure changes in the planetary and interplanetary magnetic fields	P. J. Coleman, NASA; Dr. I. Dorn, Caltech; Dr. E. J. Smith, JPL; Dr. C. P. Jansky, NASA

Mariner might not survive its "Perils of Pauline" ordeal, as the ever-nearing sun threatened to overheat the probe and cook its inside instrumentation into silent junk.

But the smoking batteries, transmitters and sensors valiantly held up. Earthly hearts sank twice more when Mariner failed to answer the first two commands to begin scanning the planet. It was rapidly approaching, early on December 14. Some 3 hours and 20 minutes apart, those two signals failed to start the sequencing timer clock aboard Mariner. Time was drawing short when Goldstone took the third bend on the disobedient probe and finally hit the bull's-eye - the center of Mariner's earth-oriented dish for picking up signals from its absentee masters.

All else that followed was routine, once the ingenious monitoring system began operating through the 42-minute period of flyby observations. The two radiometers took the planet's temperature at two levels - among the clouds and down at the surface. A magnetometer began noting for any indications of a Venusian magnetic field. Finally, a Geiger counter (which had counted

earth's. The fact that Mariner's trajectory was "best" about 25 degrees during flyby indicates this approximation is near the truth. But more exact figures will come when the full telemetry data (as to distance and velocity at the time) are interpreted.

Other data expected, which astronomers are eagerly awaiting, will be more accurate figures for the cloudy planet's distance from the sun, its orbital speed, and its mass. Other bonuses may come from Mariner, such as the depth of the Venusian atmosphere, the true albedo (reflecting power) of its dense clouds, and the amount of radiant energy per square foot (solar constant) received from the sun at that distance (67,000,000 miles).

But the answers scientists were most agog over revolved around the possibility of LIFE on our sister world. This depended on several factors - sufficient oxygen in the atmosphere, some water on the planet, and the general surface temperature. On the basis of rough checks of the telemetry data, rushed through before the end of the year, NASA has made a tentative announcement: continued on page 2

IN THIS ISSUE CREATING A SPACE SUPERMAN MULTI-ENGINE MIRACLE TELSTAR AND RELAY

OPTIMAN—Future Astronaut Specialist Calls for New Species of Homo Sapiens

Are the Soviet space medicine experts and astro-biologists on a crash program to create a new species of homo sapiens - spacemen who are super-strong, radiation proof and possess computer-fast minds?

This was the startling conjecture of Dr. Tobey Freedman at the recent symposium of the American Rocket Society in Los Angeles. A space-medicine specialist for North American Aviation, Inc., Dr. Freedman set the audience buzzing with a speech proclaiming that earth-bound man is an "obsolete model" not suited for the invasion of space. For this, he suggests, we need a "space-age mutant" directly "tailored" by bio-astronautics techniques into a true "space" man.

This can be accomplished by the new science of bionics - adapting electronics techniques to biological processes - which has already in several tiny pocket-type "timer" devices and cardiac pacemakers, for their hearts beating rhythmically thus allowing them to leave hospitals and live normal lives. The enormous new knowledge about the human body and brain, coming out of astronaut training and orbital flights, will soon make possible much greater human changes.

The space medicals are already hot on the trail of drugs which remarkably improve the resistance of living tissue to deadly radioactive rays of the nuclear-bomb variety. Related drugs will undoubtedly be found that make spacemen almost impervious to killer space radiations such as the Van Allen Belts and solar-flare "death-ray" storms that periodically sweep through

Dr. Freedman also predicts that some aspect of bionics - probably an electronic "stimulator" implanted near the brain - can also speed-up human thinking processes to match the super-speed capacity of computers. His method for bestowing super-strength is to produce a "high-compression metabolism" which allows men to draw on enormous bursts of musclepower so that their hands can "twist off the cap of a pickle jar unsaid."

Before anyone calls him "Dr. Frankenstein," let us remember that another experimenter long ago altered Neanderthal Man even more drastically - showing his chin out, doubling the size of his skull and bulging out his forehead, straightening his bent spine, withering his appendix and tarsal (tail) bone, and removing most of the thick fur-like hair over his body. That experimenter, constantly seeking to improve its imperfect product, was nature (or evolution). Dr. Freedman is simply suggesting that since evolution works much too slowly, we should now put nature's long-range Bio Project (which has never ended) on a crash basis for the invasion of space.

This space medic's daring ideas go even further to where the future spacemen in time will have interchangeable organs and will utilize a "body bank" to "exchange his falling liver the way we change tires after 30,000 miles." Also, at a sort of "human garage" orbiting above earth, he will obtain live finger

extensions "with interchangeable screwdriver ends" in order to carry on his job as a satellite repairman 500 miles above earth.

Dr. Freedman's name for this new "engineered human" is optiman, meaning having the optimum qualities for space duties. Year-long trips to Mars wouldn't bother Optiman, who ignores death-dealing radiations his spaceship plows through, computes errors in his course in a split-second, and upon landing at Mars, totes a huge backpack when exploring tirelessly for days without sleep.

Optiman is not the first idea for an "improved" man. Some years ago, Manfred Clynes and Nathan Kline, medical researchers at Rockland State Hospital at New York, envisioned Cyborg Man - from CYbernetics (computer principle) and ORganism - who through advanced bionic techniques would even be able to exist in a wider range of temperatures, 200 degrees below or above zero, with equal aplomb. Furthermore, in a state of semi-hibernation, his slowed-down body processes would only require one breath of oxygen each day, and no food or water for a whole year. Obviously, a Cyborg crew of astronauts would be ideal for long trips of 5 or 10 years to the outermost planets.

Other proposed variations of these beyond-human astronauts include the following alterations in the aged physiology of the human organism, in order to let them conquer space fearlessly, painlessly, and almost deathlessly.

* Deep-freezing the spaceman's body into complete suspended animation, yet keeping his mind alive with suitable electronic stimuli and/or "psychic drugs" (anti-depressants).

* Giving him super-sensitive eyes able to "see" infra-red and ultra-violet rays, thus extending his sight to equal a dozen scientific instruments and eliminate lugging them along into space.

* Giving him brand-new senses beyond the traditional five, so that this astro-man can "feel" magnetic fields, hear radio-waves directly by ear, and "smell" radiations so that a x-ray or odor would warn him of danger from invisible death. * Find and stimulate his ESP (Extra Sensory Perception) mechanism so that when exploring another planet he could maintain blackout-proof contact with his fellow spacemen via "thought-wave" messages.

* Colonize on other planets - such as Mars - to be bionically adapted for breathing the thin air without artificial tanks and helmets, also immunized against poison or suffocating gases they would meet on Jupiter, hydrogen, methane and ammonia.

Will some or most of these changes come about? And how soon? The first answer is undoubtedly yes to some degree, but the second answer cannot be reduced to any continued on page 2

SPACE WORLD

VOL. 4, NO. 2

Second Class Postage Paid At New York, N. Y.

FEBRUARY, MARCH 1963

\$50,000,000,000,000 FROM THE ASTEROIDS

Most startling report of the Space Age answers critics of our Space Budget

by DANDRIDGE M. COLE

Abstracted from Institute of Astronautical Sciences.

Introduction

THE ASTEROIDS HAVE suffered in the past from competition for the astronomer's attention by the distant stars and galaxies and more recently by the new intense interest in the moon and the planets. But interest in these fascinating objects can be expected to increase rapidly as we begin to realize the capabilities of our near future astronautical technology and the importance of the asteroids to space exploration and to pure science.

The cis-Martian or close-approach group of asteroids have been little more than curiosities up to the present time. To some astronomers they have been largely a nuisance and astronomers in general have devoted little effort toward gaining more information about these remarkable objects.

Actually almost no firm data is available for any of these small asteroids except their orbit characteristics. The firm data comprises orbit characteristics known with varying accuracy for points of light of varying intensities. Diameters have been estimated on the basis of brightness and assumed albedos. However, since the compositions are not known, the albedo estimates could be grossly inaccurate.

Masses can be estimated from the assigned volumes if densities are assumed. But again some basic assumption must be made regarding composition, and there is no direct evidence to support any particular theory of the chemical structure of these objects.

Astronomers have estimated that there may be thousands of these objects in this size range in this type of orbit. Much smaller objects down to perhaps 100 feet in diameter with a mass of approximately a billion pounds, could number in the hundreds of thousands.

Such objects would be negligibly small by astronomical standards and have thus been of little interest to astronomers. However, by astronautical standards (payloads carried to escape velocity) they are enormously large and should be of great interest to space explorers.

It has generally been believed that asteroids are similar in composition to the iron or the stony meteorites or perhaps that both types are represented in the asteroid belt. Opik,

This special supplement of SPACE WORLD is devoted to what the editors believe is the most SIGNIFICANT ASTRONAUTICAL CONCEPT that has been devised since the Space Age began.

From a brilliant member of the Advanced Space Science Research Facilities of General Electric's Missile & Space Division comes a truly tremendous futuristic insight, which can revolutionize our present-day attitudes toward space — and its seemingly burdensome costs.

Based on solid astro-engineering technology, this space scientist's unchallengeable data prove with little doubt that opponents of an expanded space program—whether in academic circles, industrial firms, or Congress—are as short-sighted as anti-Columbus critics would have been in 1492. Here, in realistic economic terms, is the manner in which our space dollars will come back to us a thousandfold.

This extraordinary report presented by SPACE WORLD foretells the GREAT "GOLD RUSH" OF THE ASTEROIDS — not in the 21st century, not in the next generation — BUT WITHIN OUR LIFETIMES.

IMPORTANT: This special issue of SPACE WORLD is being sent as an extra bonus only to our subscribers. It does not count as part of your subscription. Your subscription will be automatically extended for one month so that you will get your full allotment of the regular issues of SPACE WORLD.

SPACE WORLD

The magazine of space news

Sept.-Oct. 1963

50¢



THE TIROS RECORD

Album
MANNED EXPLORATION OF MARS

WOMAN OF SPACE - Valentina Tereshkova

*NOTE: The September/October 1963 Space World was the first issue published by Ray Palmer.

a Promise

The purpose of the printed word, or of a magazine as a whole, is to convey a message. The magazine preserves this message as a historical record for the ages. The message has to be one of value and of interest to the subscriber or the magazine will disappear from the scene. The publishers of Space World do not wish the magazine to disappear from the scene.

To grow ever larger and better (re-emphasizing the words of the publisher) we want to put into Space World the items and features of interest to you. This we will do. So, don't be bashful about writing to us and making your desires known.

Naturally, every editor has certain aims and ideas of his own. However, I shall try not to inject too much of my own character and personality into your magazine.

We intend to present the facts, without embellishment, about the happenings in the space world that will affect the lives of each of us.

We intend to recognize history, whether it be of today or whether it be from the past, if its impact is still felt in America's space program.

We intend to use many pictures in Space World. We too agree with the wise old saying that one picture is worth 10,000 words. This will be in addition to the special album in each edition.

We intend to recognize all the sciences. The biology of space is as important for manned space flight as the physics or mathematics of propelling spacecraft into outer space.

We intend to progress steadily to better quality, full-color photos, and a larger magazine.

With dedication to these aims, I feel that we can give you a magazine that you will like and one of which we will be proud.

Francis Bremmer
Editor

★★★

IMPORTANT INFORMATION for SUBSCRIBERS to SPACE WORLD

SPACE WORLD has a new owner! With this issue, dated SEPTEMBER-OCTOBER, a new and rejuvenated magazine comes to you. We're back to full-color covers, we've got a special photo-section for collectors, we've got top articles, and top features. But most of all, we want to ask you just one important question: What do you want in future issues of SPACE WORLD? The new editor is a top man in his field, a science professor, and he is willing to give you anything you ask for - so please write him and let him know! Make your suggestions with the full knowledge that this is YOUR magazine, and it's being put out for you!

When you subscribed to this magazine, you paid your money to the former owners. When we bought the magazine, we bought your subscription too, and we intend to deliver every issue you have coming, no matter who got the money. In short, you can't lose! Your subscription will be extended for the months in which publication was missed, and you'll get SPACE WORLD until the number of issues subscribed for have been delivered. By that time we feel sure you'll have discovered that this is the best space magazine you've ever seen, and you won't miss a minute in renewing your subscription.

The last issue you received was dated March, 1963, and was not a regular issue of the maga-

zine. From now on, you'll get full-size magazines, and every issue will improve, we promise. There were no issues between March and September. As for the September-October dating, we've got to condense for this year, to prepare for the big job of putting out the magazine monthly. We think we'll hit that schedule with the November issue; anyway we'll try. But with January for sure!

Lastly, allow us to introduce ourselves. We are Palmer Publications, Inc., we call Amherst, Wisconsin our home, we do our own printing and distributing, we have an extremely capable staff (as listed on the contents page) and we are, like yourselves, space fans of the most dedicated type. Your publisher, Ray Palmer, began writing about space and satellites and astronauts (in science fiction) way back in 1929 when he and Willy Ley and Fritz Von Opel belonged to the German rocket club, Verein fur Rhaumschiffahrt. We're pioneers in the rocket field, so we know what we're doing!

This isn't the only magazine we publish: we also put out SEARCH (occult), FLYING SAUCERS (just what its name implies), THE HIDDEN WORLD, (science fiction), INSPIRED NOVELS (great novels of the past). And we're mighty pleased to meet you!

The "gang" at SPACE WORLD.

SPACE WORLD

Nov.-Dec. 1963

50¢

The magazine of space news

WISCO

CAN MAN SURVIVE IN SPACE?

MEDICAL ASPECTS
OF SPACE FLIGHT

THE REALM OF SUPER COLD

"Cryogenics"

NUCLEAR PROPULSION

How It Will Work

Do-it-Yourself SPACE LAUNCH VEHICLE

GENERATING ELECTRIC POWER IN SPACE

"Magnetohydrodynamics"

SPACE SUITS

ALBUM: X-20 HOW IT FLIES



SPACE WORLD

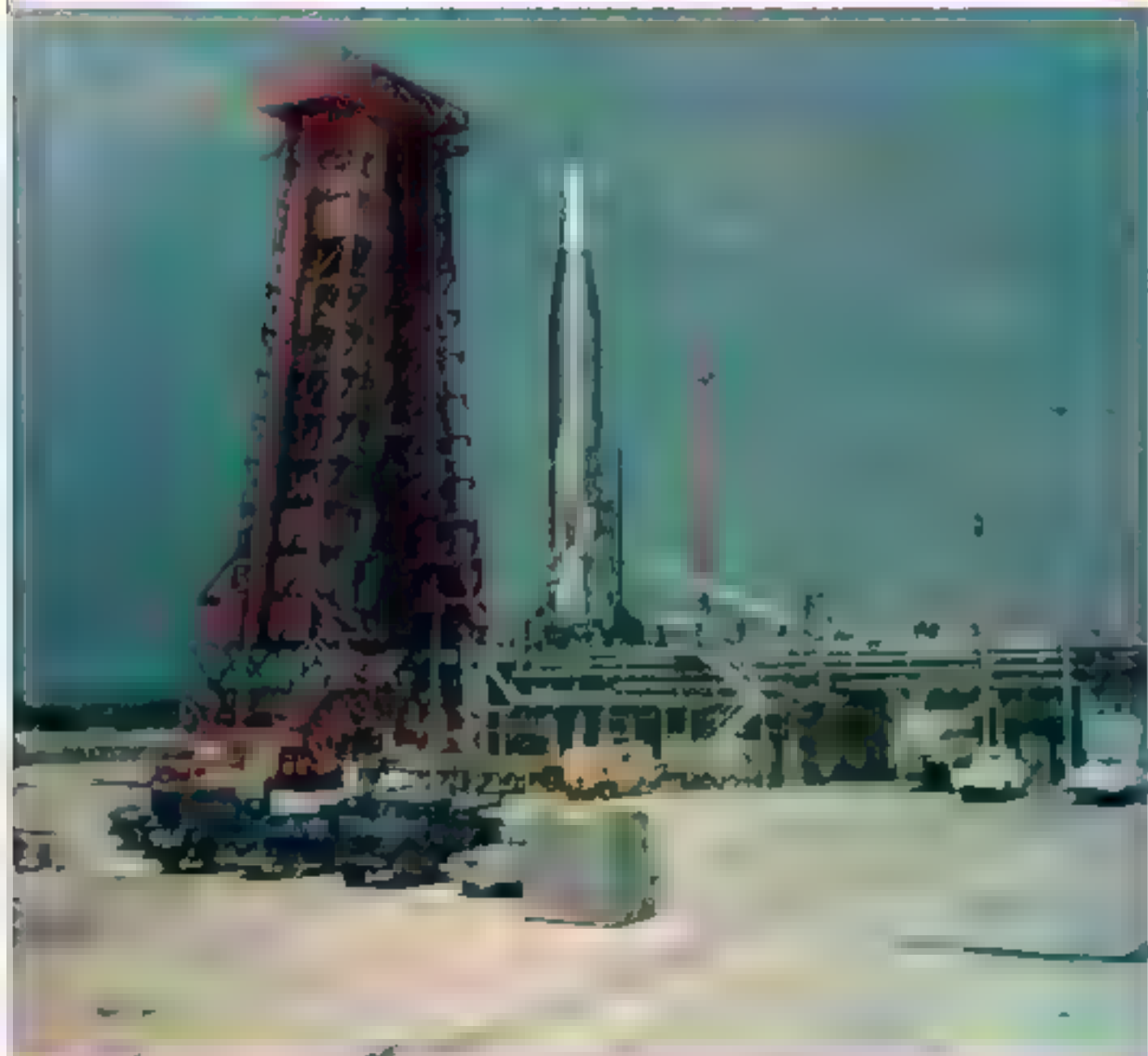
1964

SPACE WORLD

January 1964

50¢

The magazine of space news



Full color ALBUM — AMERICAN ROCKETS — PAST AND FUTURE
ELECTRIC PROPULSION — FOOD IN FLIGHT — PROJECT MERCURY
HOW DOES THE DESCENT TAKE PLACE?
COMPLETE LAUNCH CHRONOLOGY — SPACE PROBE STERILIZATION

50¢

SPACE WORLD

The magazine of space news

February 1964

GEMINI —

Chronology

Mercury Experience Applied

The Gemini Launch Vehicle -

Titan II

LUNAR EXCURSION

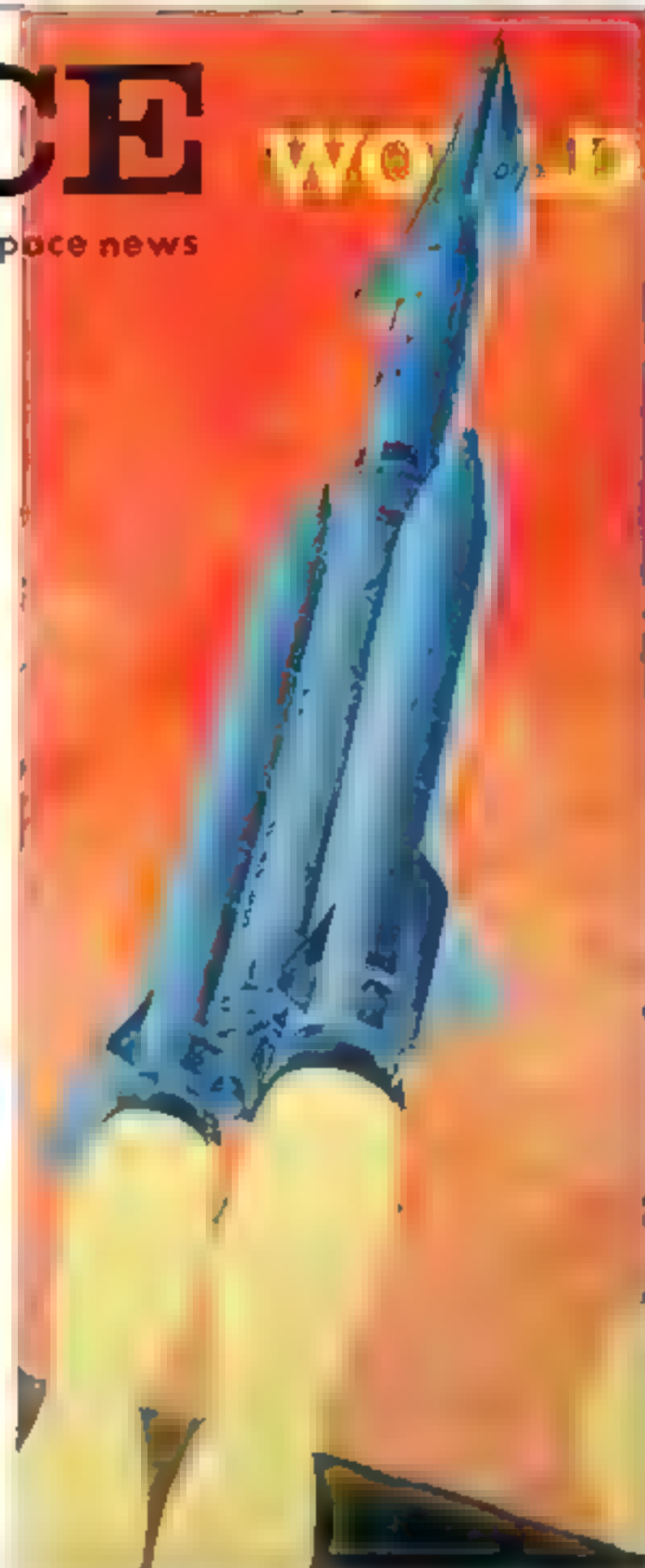
POWER FROM WASTE

PHOTOGRAPHY IN
SPACE

ELECTRICITY FROM
MUSCLES

ALBUM —

U. S. Space Program
Summarized



SPACE WORLD

March 1964

50¢

The magazine of space news



SUPERVISED
AMATEUR
ROCKETRY -

The Safe Way

ROCKET MAIL

You Can Participate

SPACE WORLD

April 1964

VOL A-6

50¢

The magazine of space news



ECHO II

FIFTH SATURN SA-5

The First Official U.S. Missile Mail

ALBUM: ATLAS CENTAUR AC &

SPACE WORLD

The magazine of space news

May 1964

50¢

VOL A 7

The Story of
U. S. Satellites



ATOMIC IMP



TROS VII



ECHO II
and many others



SPACE WORLD

The magazine of space news

June 1964

50¢

VOL A 8



SPACE ADVANCES
IN THE NEXT FIFTY YEARS

SPACE WORLD

The magazine of space news

July 1964

50¢

VOL A-9



SPACE WORLD

The magazine of space news

August 1964

50¢

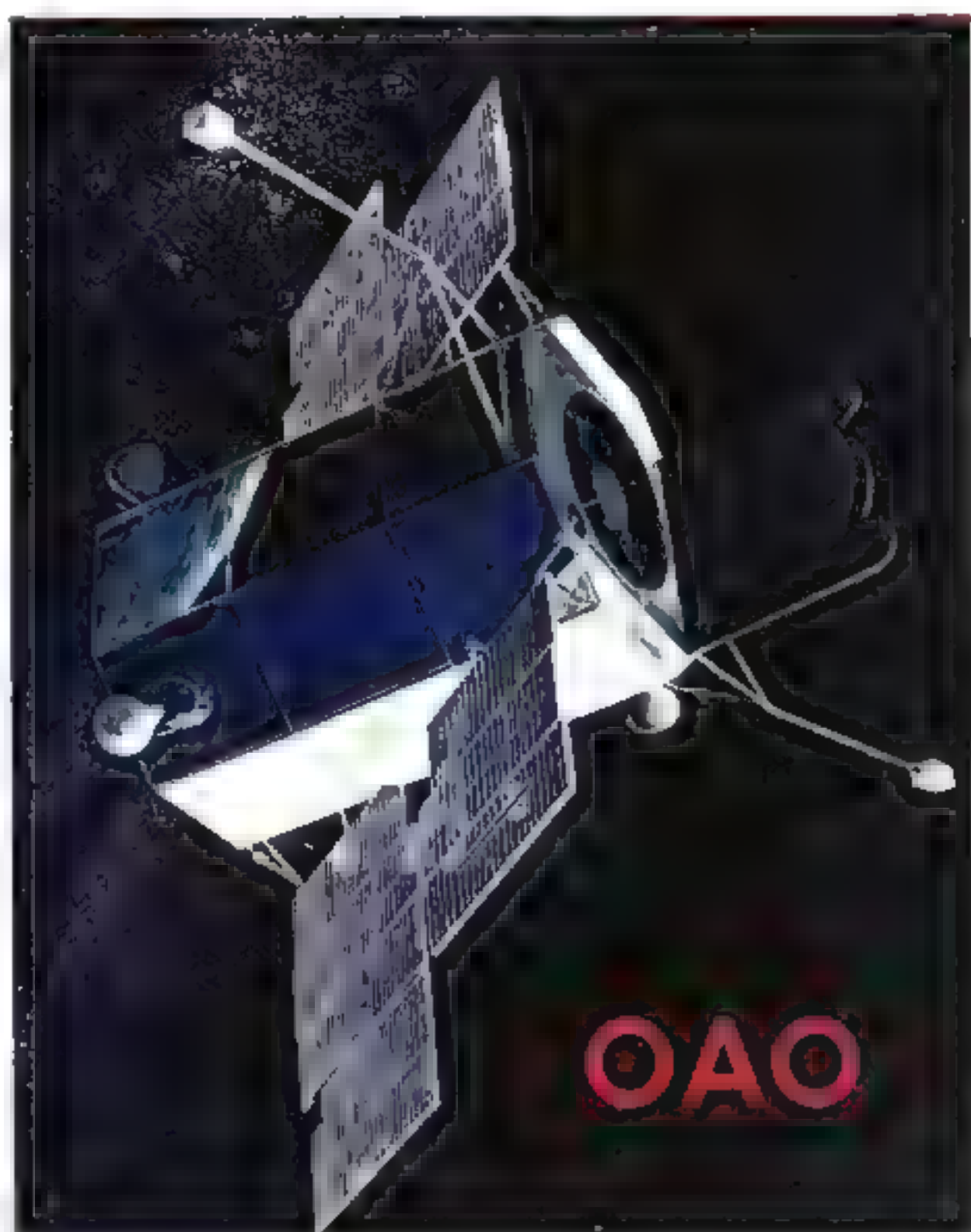
VOL. A-10



APOLLO

SPACE WORLD

September 1964 50¢
VOL. A-11
The magazine of space news



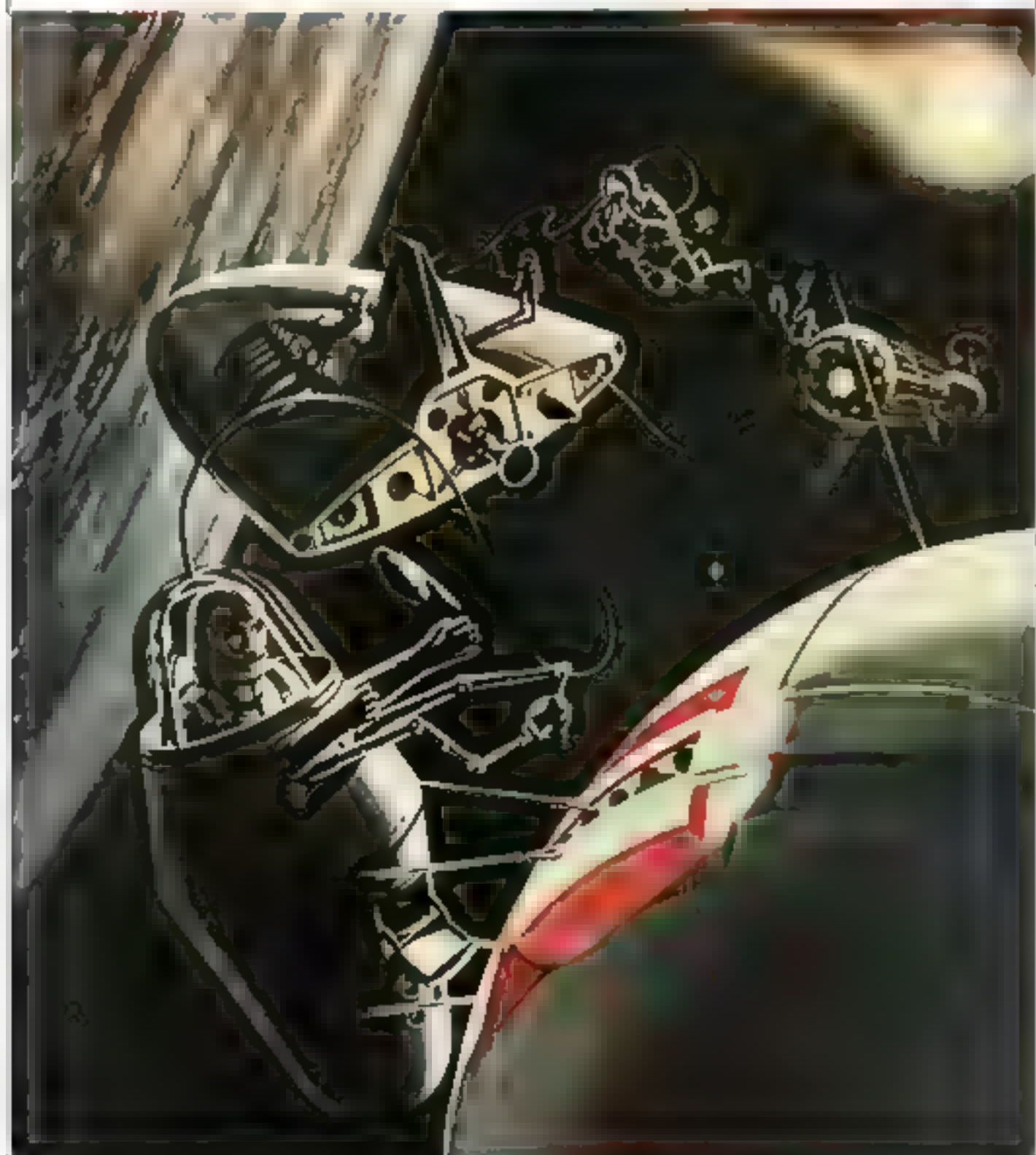
SPACE WORLD

OCTOBER 1964 50¢
VOL. A-12
The magazine of space news



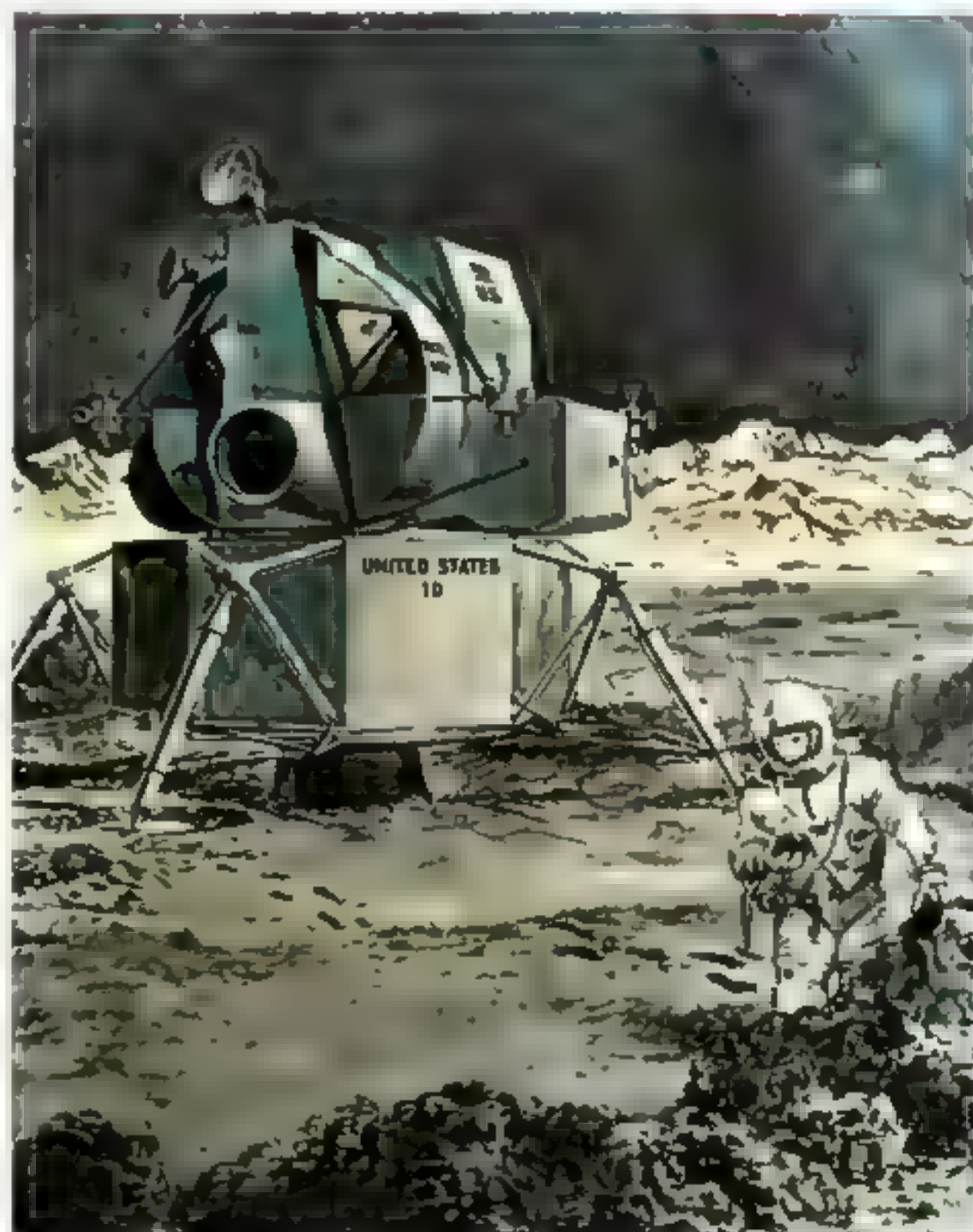
SPACE WORLD

NOVEMBER 1964 50¢
VOL. A-13
The magazine of space news



SPACE WORLD

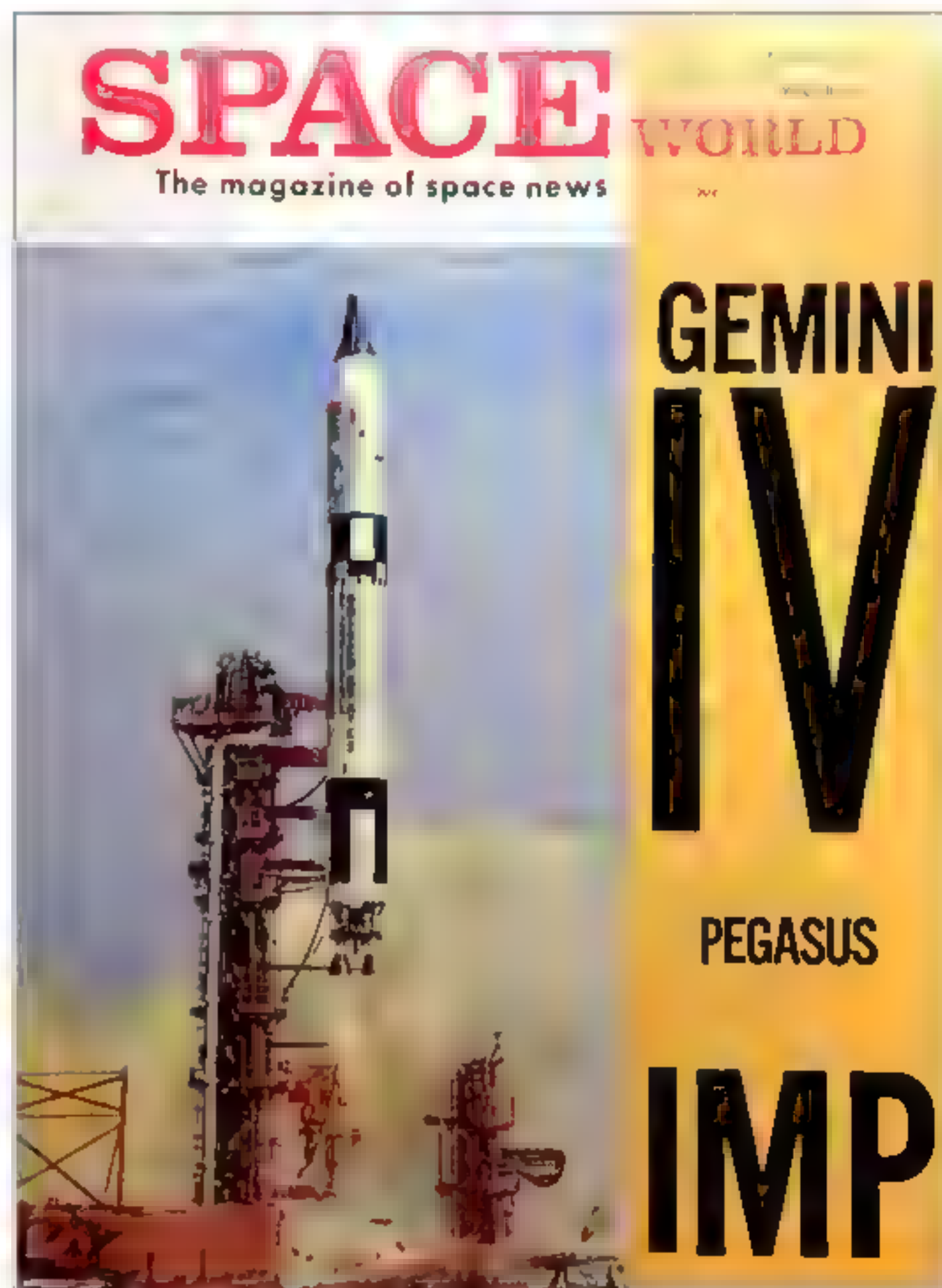
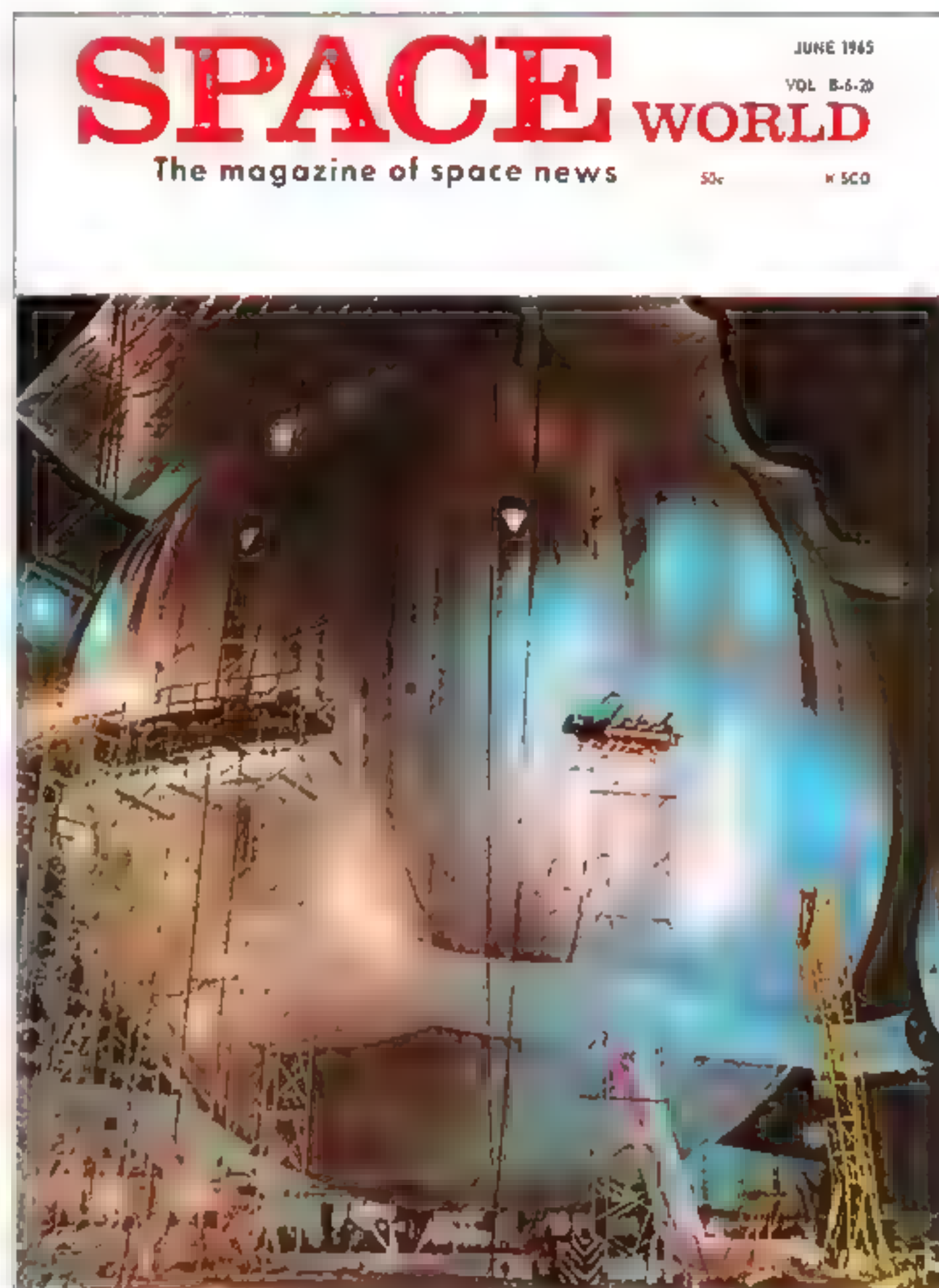
DECEMBER 1964 50¢
VOL. A-14
The magazine of space news

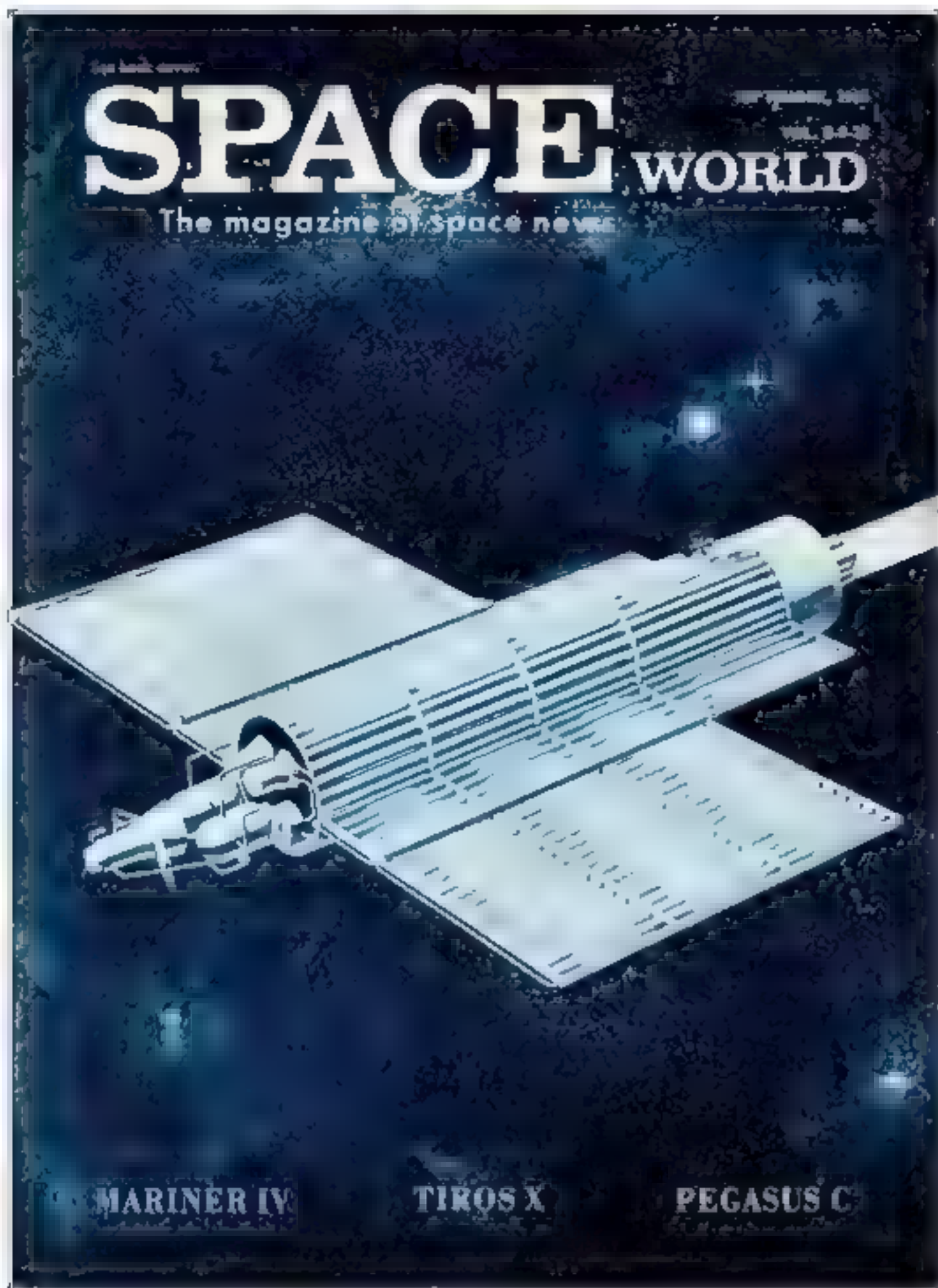


SPACE WORLD

1965

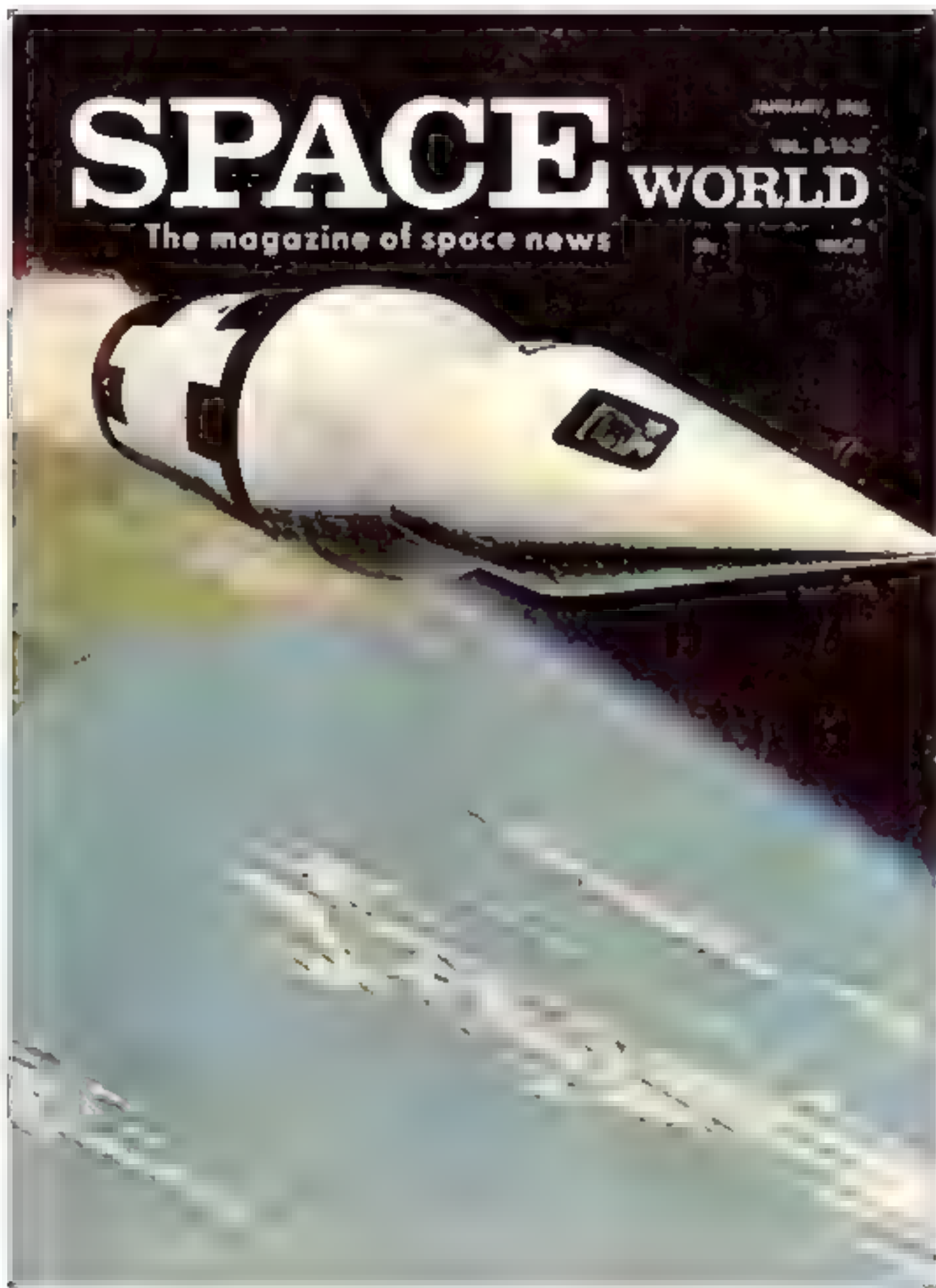






SPACE WORLD

1966



SPACE WORLD

The magazine of space news

MAY 1966

VOL. C-5-31

30¢

WISCO



SPACE WORLD

The magazine of space news

JUNE, 1966

VOL. C-6-32

30¢

WISCO



ORBITAL VEHICLE ONE - OVE-1 and OVE-5

GLOBAL DEFENSE COMMUNICATIONS

**There was no
Space World
July 1966 issued**

**This was determined by checking
the volume numbers.**

(four months either side)

March 1966, Vol. C-3-29

April 1966, Vol. C-4-30

May 1966, Vol. C-5-31

June 1966, Vol. C-6-32

-

September 1966, Vol. C-7-33

October 1966, Vol. C-8-34

November 1966, Vol. C-9-35

December 1966, Vol. C-10-36

**The volume numbers run in sequence
without the July and August 1966 issues.**

**There was no
Space World
August 1966 issued**

SPACE WORLD

The magazine of space news



SEPTEMBER, 1966

VOL. C-7-33

50c

WISCO



SPACE WORLD

The magazine of space news

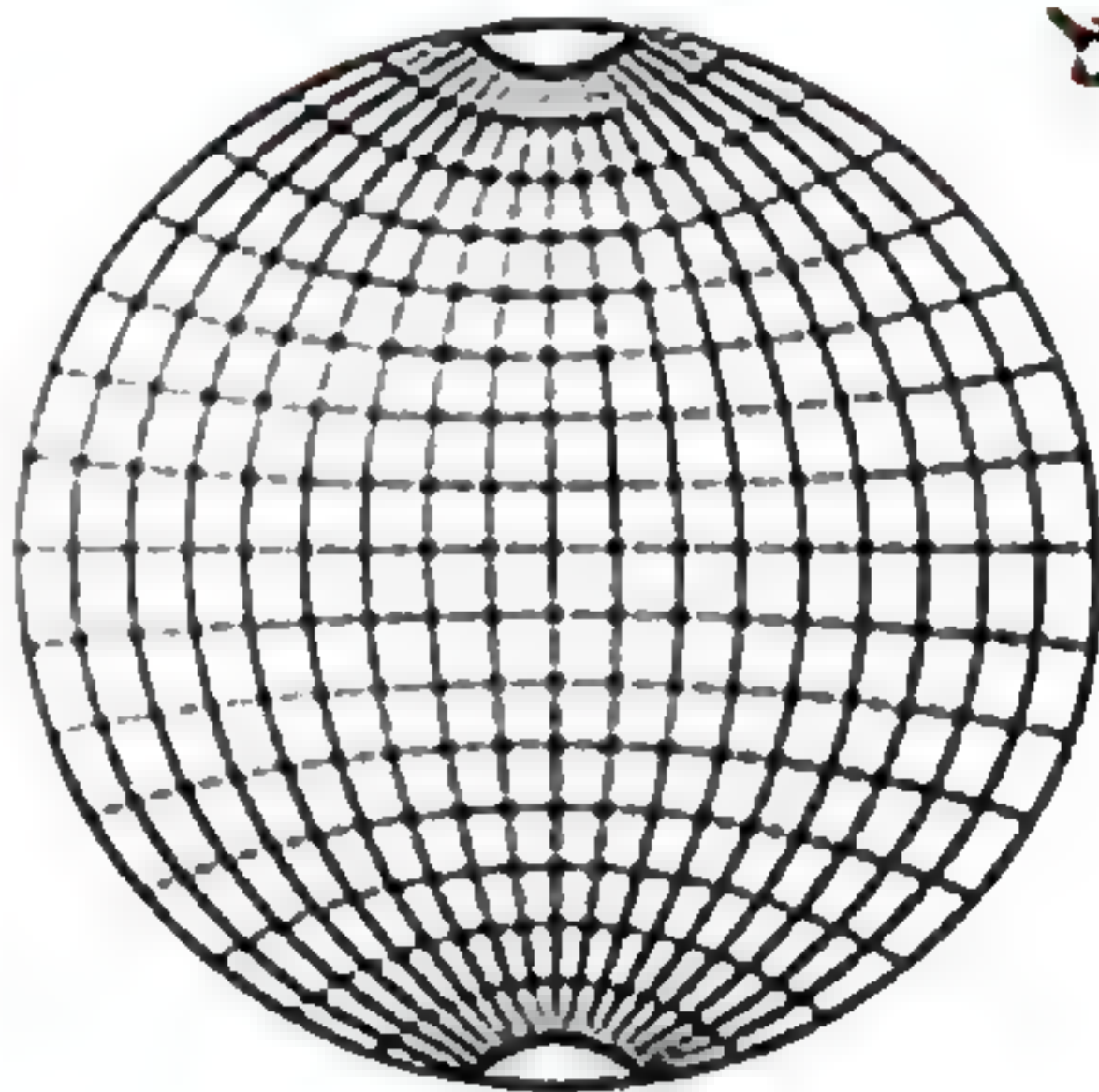


OCTOBER, 1966

VOL. C-8-34

50c

WISCO



GEMINI 9 — OGO — SURVEYOR MOON SHOTS

SPACE WORLD

The magazine of space news

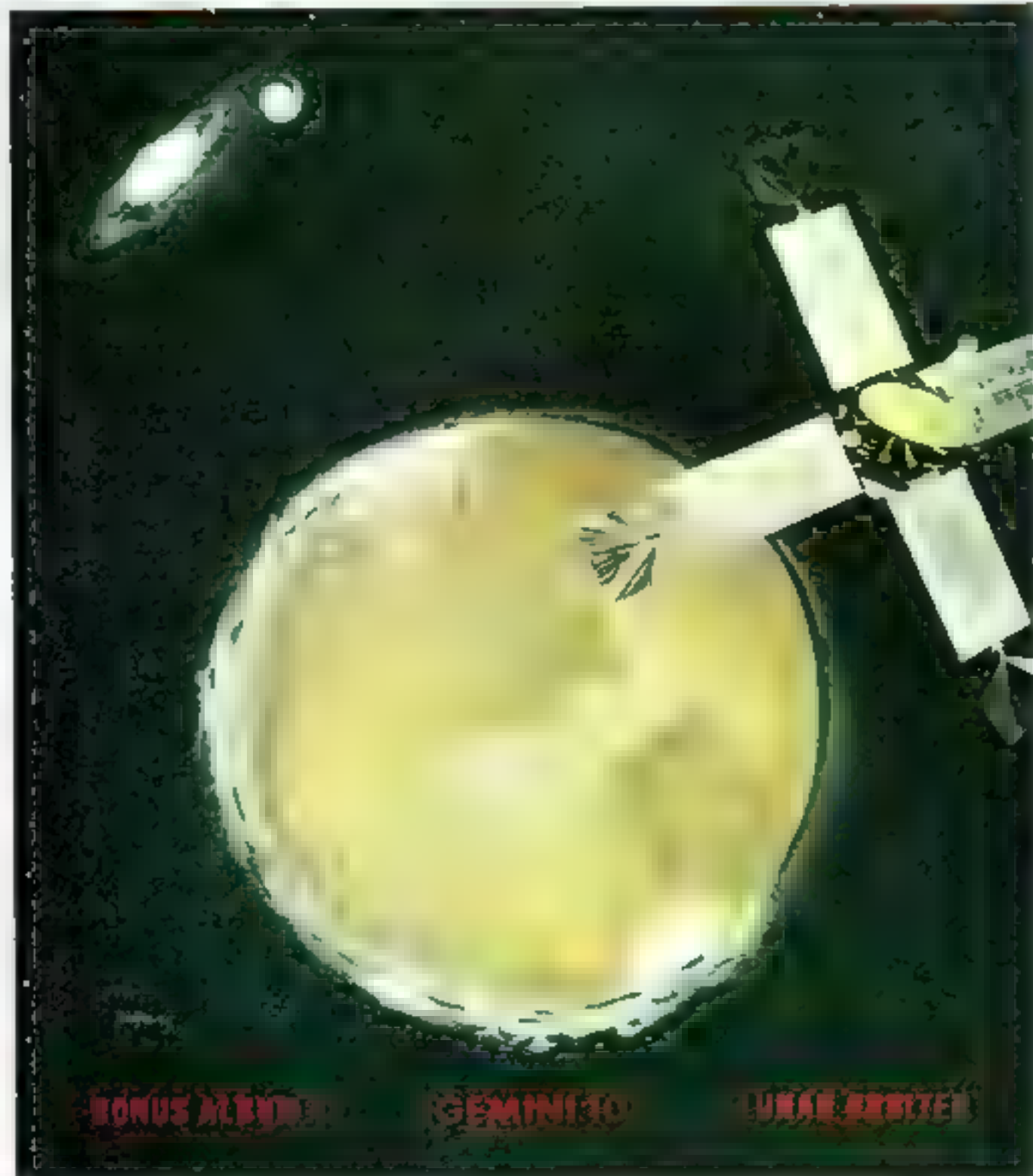


NOVEMBER, 1966

VOL. C-9-35

50c

WISCO



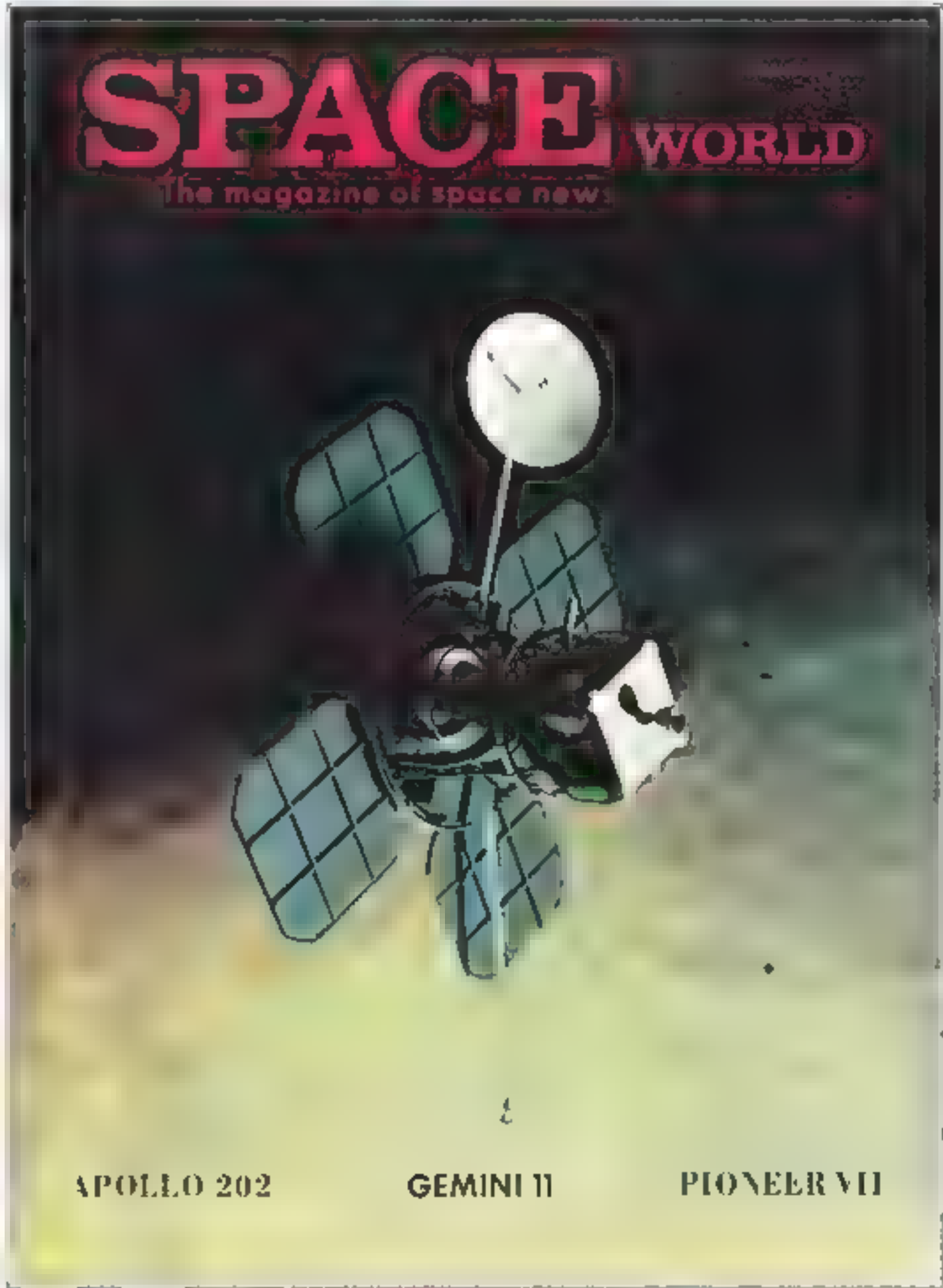
BONUS ALBUM

GEMINI 10

LUNAR ABSTRACTION

SPACE WORLD

The magazine of space news



APOLLO 202

GEMINI 11

PIONEER VII

SPACE WORLD

1967

SPACE WORLD

The magazine of space news

60c

WISCO

JANUARY, 1967
VOL. D-1-37



COMSAT

ATLAS - CENTAUR 9

GEMINI 12

SPACE WORLD

The magazine of space news

60c

WISCO

FEBRUARY 1967
VOL. D-2-38



TITAN III-C

ASTRONAUT PHOTOS

COMPLETE SPACE LOG

SPACE WORLD

The magazine of space news

60c

WISCO

MARCH, 1967
VOL. D-3-39



BIOSATELLITE

FLYING HYBRID ROCKET

INSTANT SPACE STATION

APPLICATIONS TECHNOLOGY SATELLITE

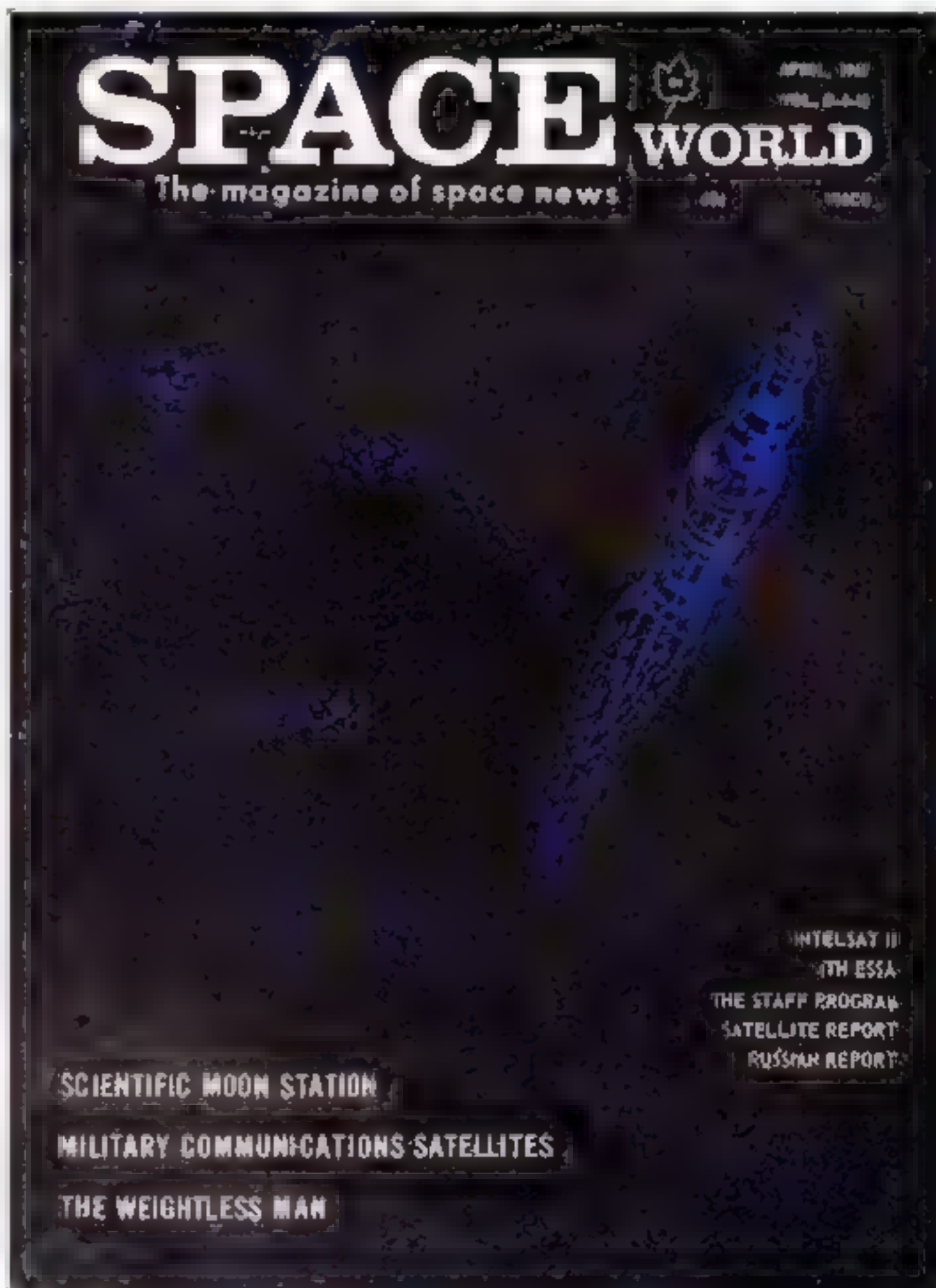
SPACE WORLD

The magazine of space news

60c

WISCO

APRIL, 1967
VOL. D-4-40



INTELSAT II
WITH ESSA
THE STAFF PROGRAM
SATELLITE REPORT
RUSSIAN REPORT

SCIENTIFIC MOON STATION

MILITARY COMMUNICATIONS SATELLITES

THE WEIGHTLESS MAN

SPACE WORLD

The magazine of space news

MAY 1967

VOL. D-5-11

60c

WISCO

THIRD ORBITER MOON PHOTO
LAUNCH

LUNAR LANDING RESEARCH
VEHICLE

NIMBUS II The "Miracle
Satellite"

SPACE WATCHER

SALUTE TO LOCKHEED

IN MEMORIAM
A Tribute to
Edmund T. Byrne Jr.
Roger D. Schiffer

LUNAR LEAPER

GEMINI, SURVEYOR, LUNAR
ORBITERS TOP 1966 SPACE
NEWS

TESTING SATURN STAGE
SEPARATIONS

RUSSIAN REPORT



SPACE WORLD

The magazine of space news



BOEING PROBE TECHNOLOGY

SPACE WORLD

The magazine of space news

JULY, 1967

VOL. D-7-43

60c

WISCO

ASTRONAUTS JOB OF
THE FUTURE —
Construction of Orbital
Stations

APPLICATIONS
TECHNOLOGY
SATELLITE

MOON MISSION

HOW LUNA-12
PHOTOGRAPHED
THE MOON

ROCKET-SONDE



SPACE WORLD

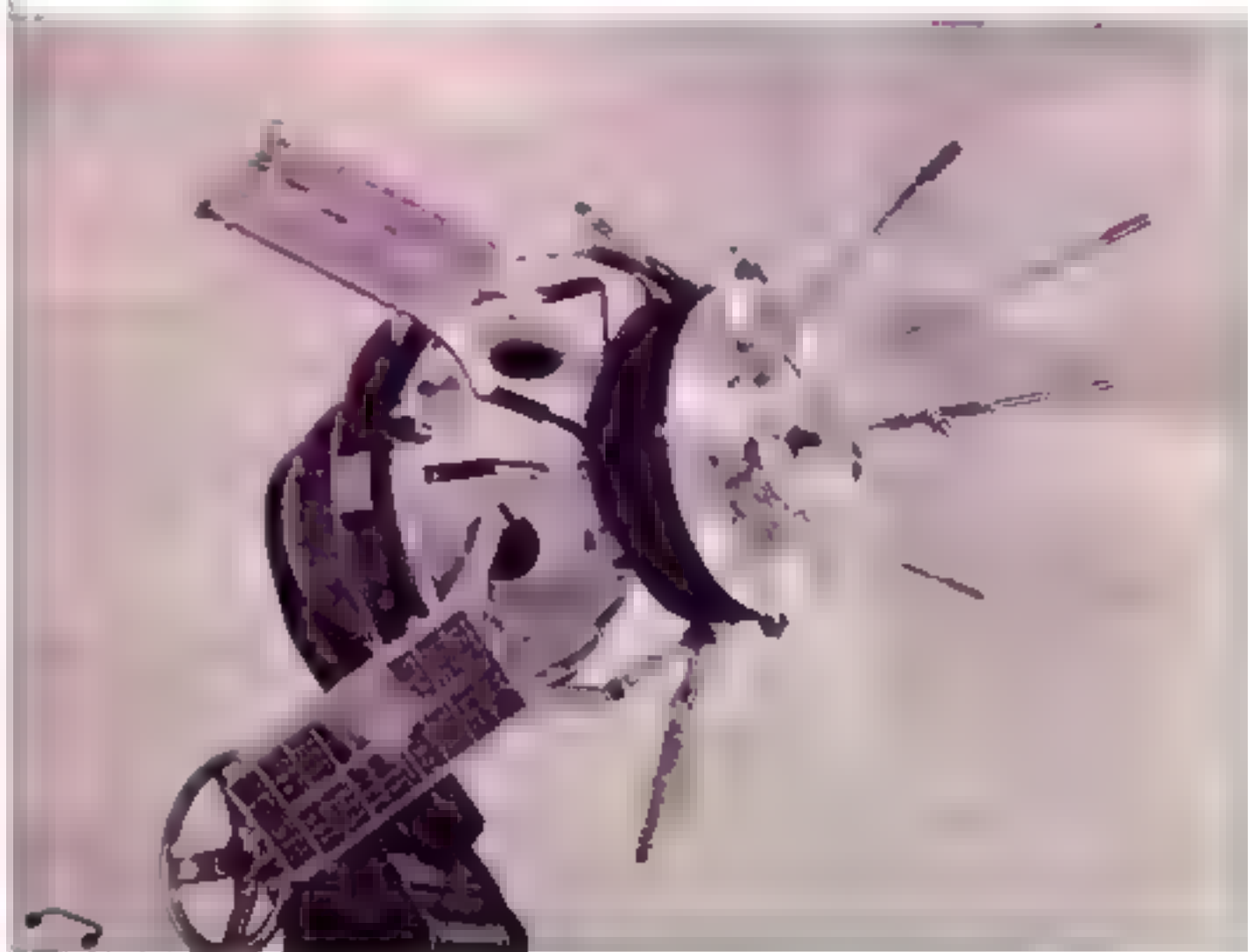
The magazine of space news

AUGUST, 1967

VOL. D-8-44

60c

WISCO



VELA—NUCLEAR DETECTION SATELLITES

SURVEYOR 3 ON THE MOON

LASER—FUTURE SPACE TOOL

THE FRENCH SPACE PROGRAM

GOOD YEAR DEVELOPES NEW TYPE PARACHUTE

SPACE WORLD

The magazine of space news

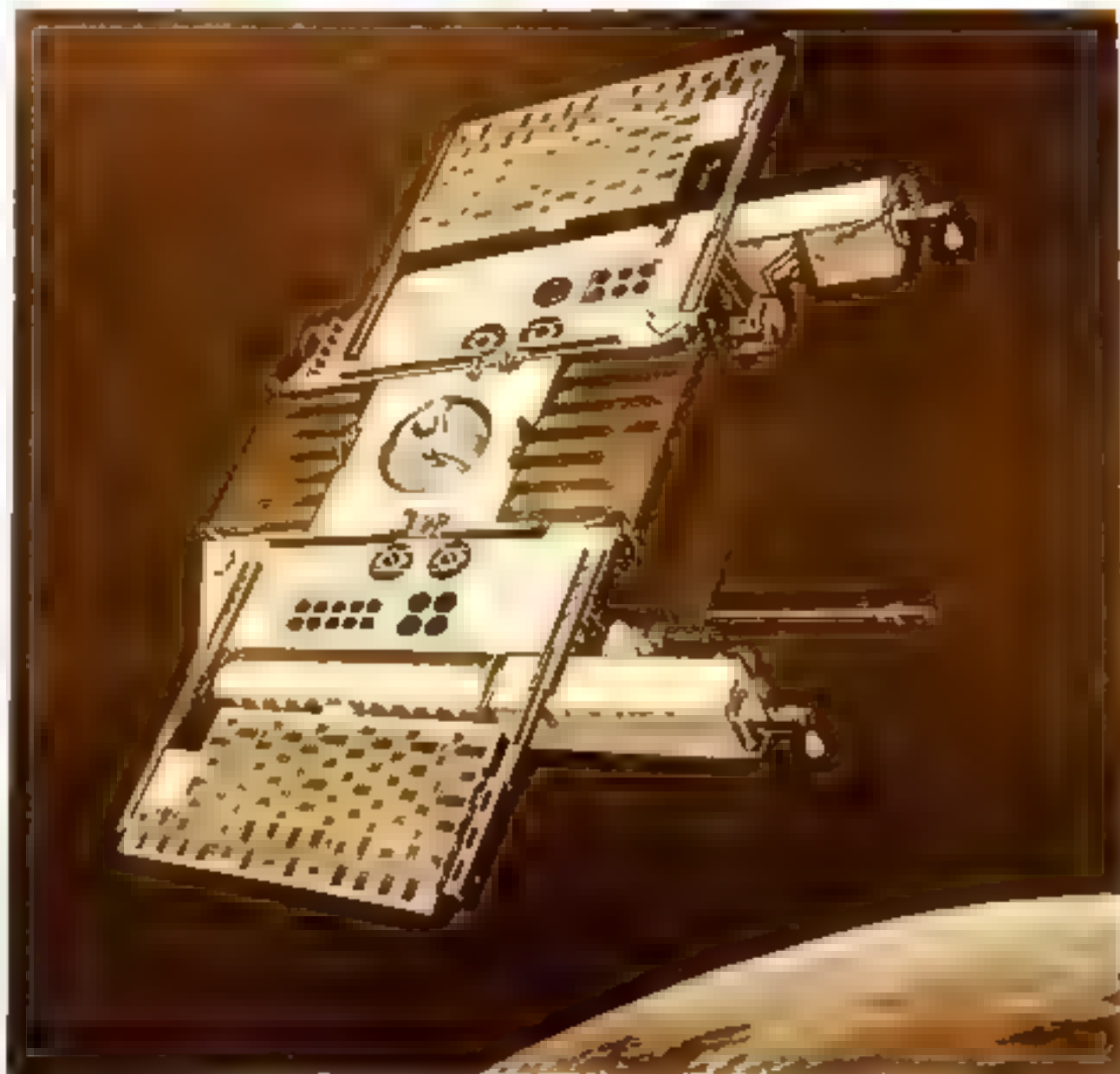


SEPTEMBER, 1967

VOL. D-9-45

60¢

WISCO



APOLLO TELESCOPE MOUNT

THE AUTOMATED BIOLOGICAL LABORATORY
RESULTS OF LUNAR ORBITER PHOTO MISSION

SPACE WORLD

The magazine of space news



OCTOBER, 1967

VOL. D-10-46

60¢

WISCO

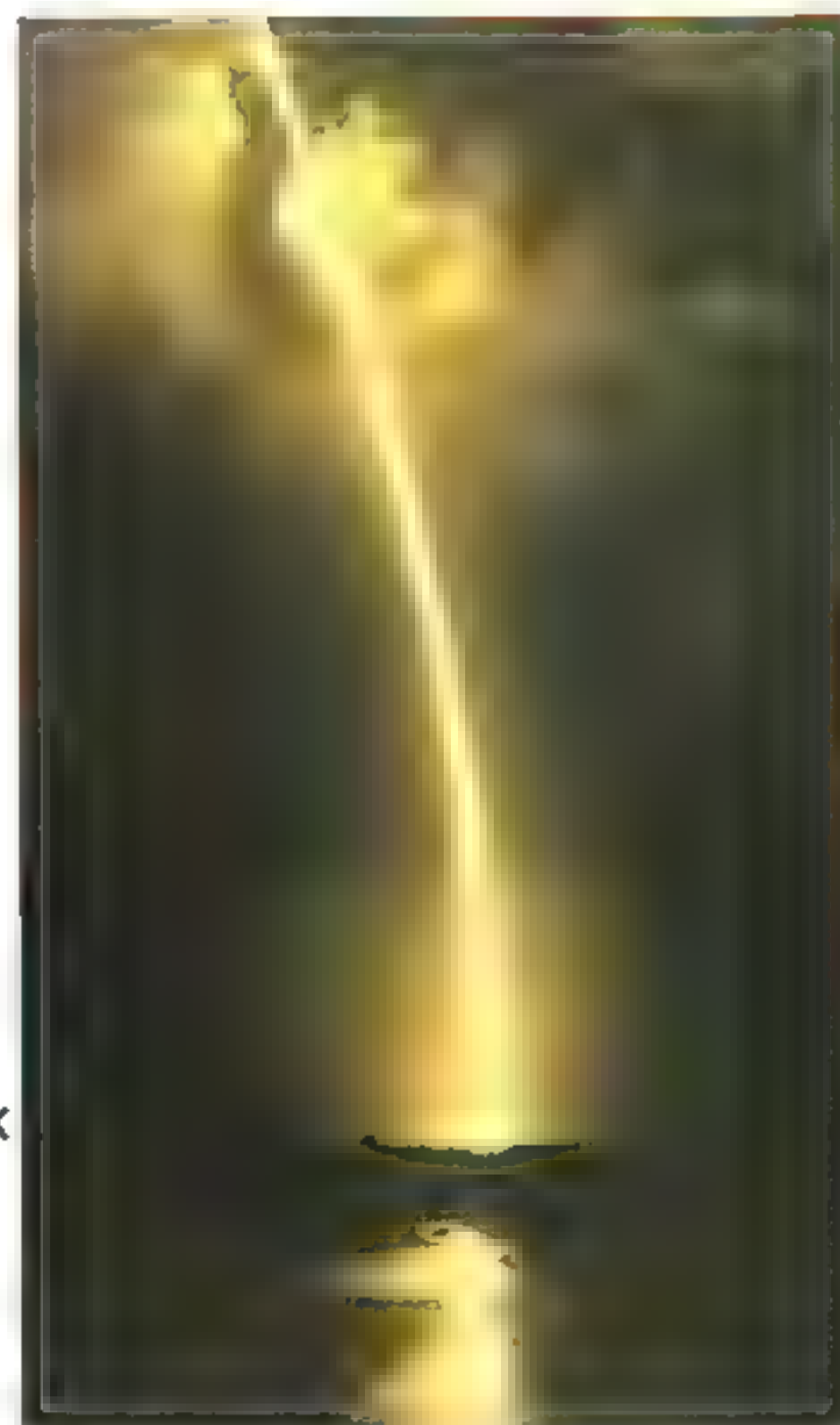
MARINER V
LAUNCH
SUCCESSFUL

EXO BIOLOGY
Its Methods
and Problems

SAN MARCO-B

UK SATELLITE
LAUNCHED

A CLOSER LOOK
AT THE
UNIVERSE



SPACE WORLD

The magazine of space news



NOVEMBER 1967

VOL. D-11-47

60¢

WISCO



OGO-IV OBSERVATORY IN ORBIT
SURVEYOR IV GOES DEAD NEW FACTS ABOUT VENUS
SATELLITES IN YOUR FUTURE

SPACE WORLD

The magazine of space news

BIO SATELLITE B
SURVEYOR V
SPACE AND TIME



SPACE WORLD

1968

SPACE WORLD

The magazine of space news

JANUARY, 1968
VOL. E-1-47

LUNAR ORBITER V

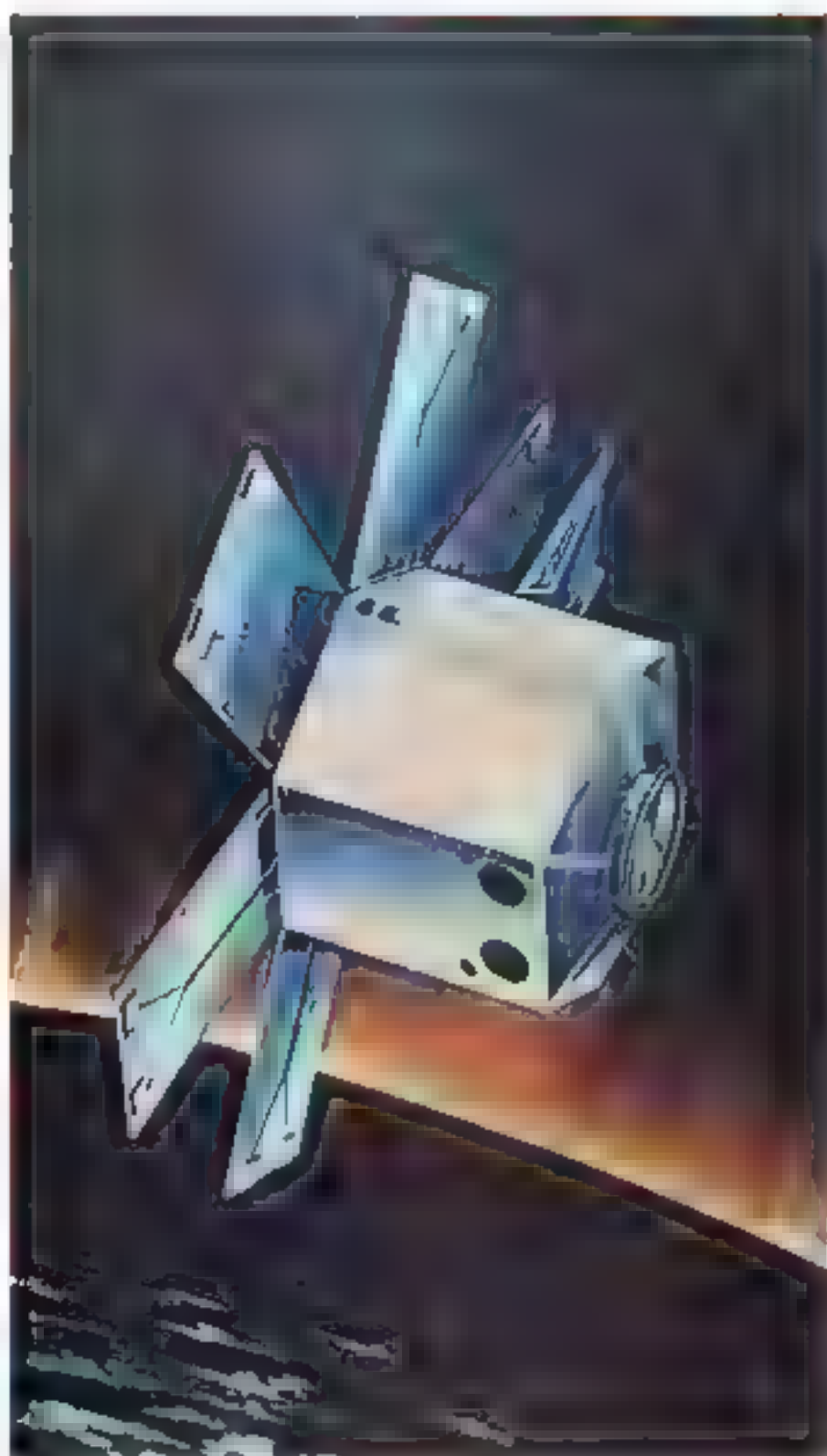
THE DELTA PROGRAM

MARS SURFACE
MULTICRATERED

EXPLORER XXXV
ORBITS MOON

MYSTERY UNSOLVED

RADIO-ELECTRONICS
AND SPACE



SPACE WORLD

APOLLO 4
NAVIGATION BY SATELLITE
POWER TO REACH THE STARS



SPACE WORLD

The magazine of space news

MARCH, 1968
VOL. E-3-51

OSO-IV IN FULL
OPERATION

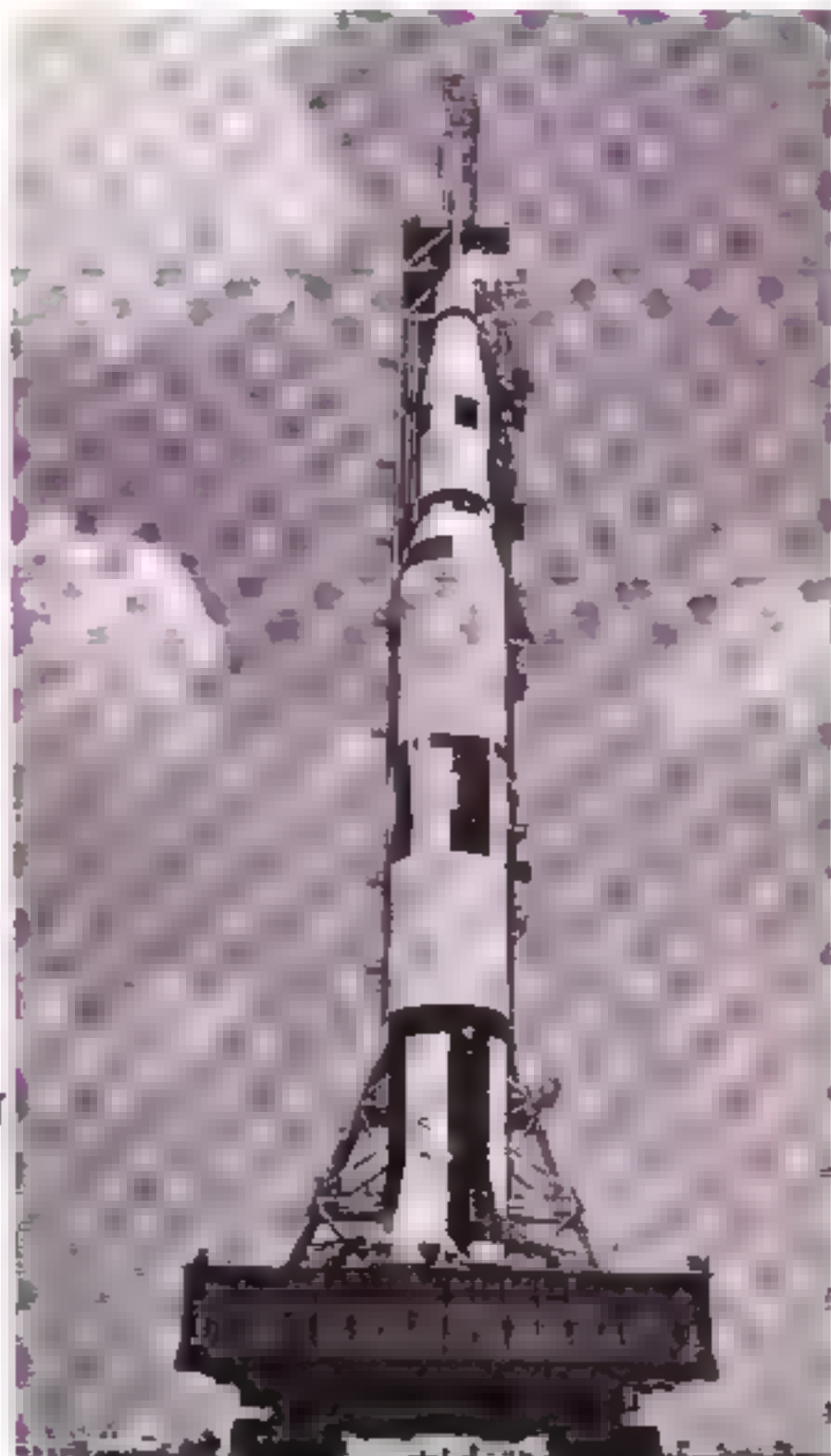
PROPULSION FOR
SPACE: THE
NUCLEAR ROCKET

EXPLORING THE
PLANETS

BACTERIA AS FOOD
FOR ASTRONAUTS

GEMINI IN RETROSPECT

WHY HAVE A SPACE
PROGRAM?



SPACE WORLD

The magazine of space news

APRIL, 1968
VOL. E-4-52

SURVEYOR 7
LANDS ON MOON

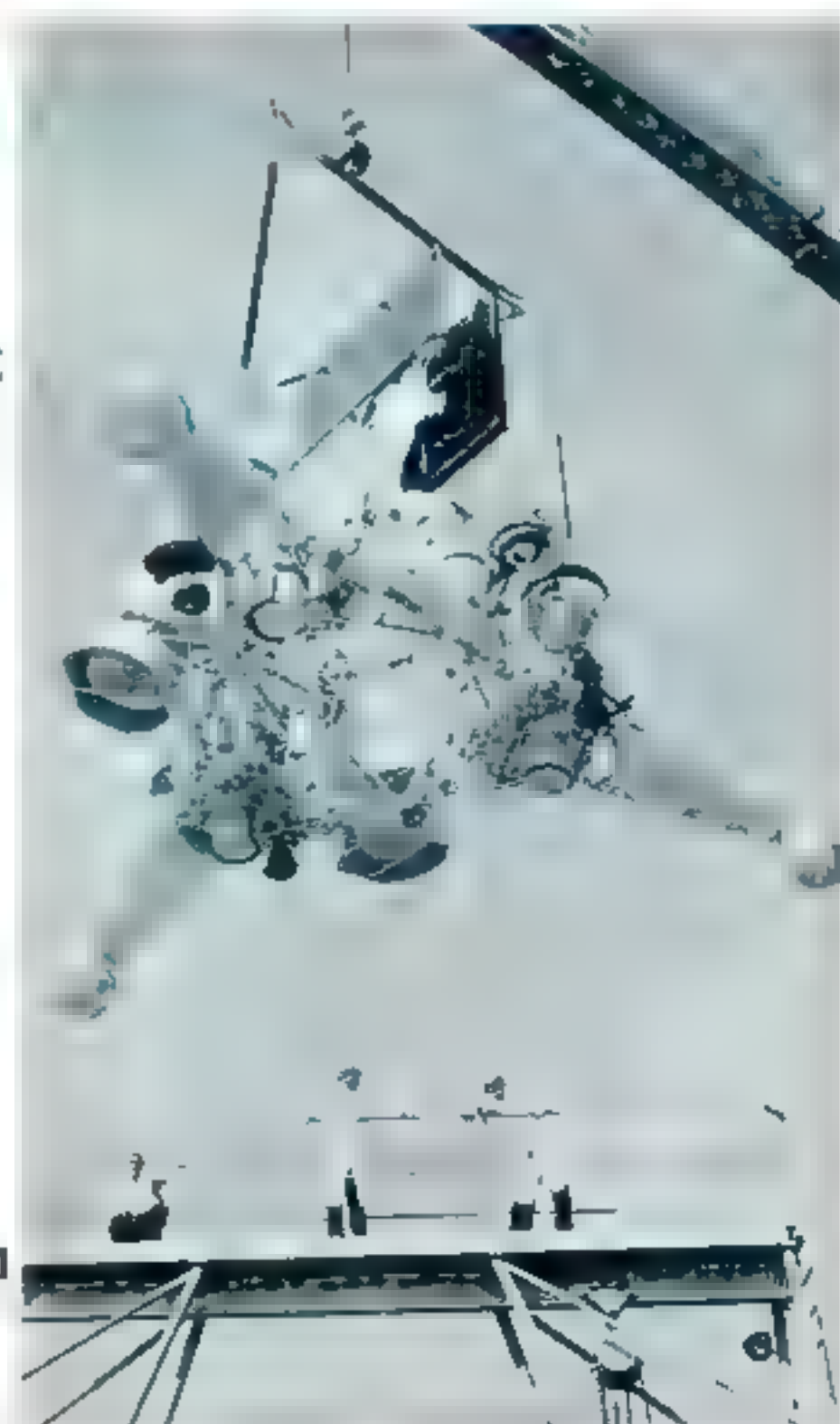
THE AGENA
ROCKET ENGINE

Ionospheric
Rocket Sounding
at Dumont
d'Urville

NASA ORBITAL
WORKSHOP

WHY OGO?

THE MOON FROM
ALL SIDES



SPACE WORLD

The magazine of space news

MAY, 1968
VOL. 6-5-53

60c WISCO

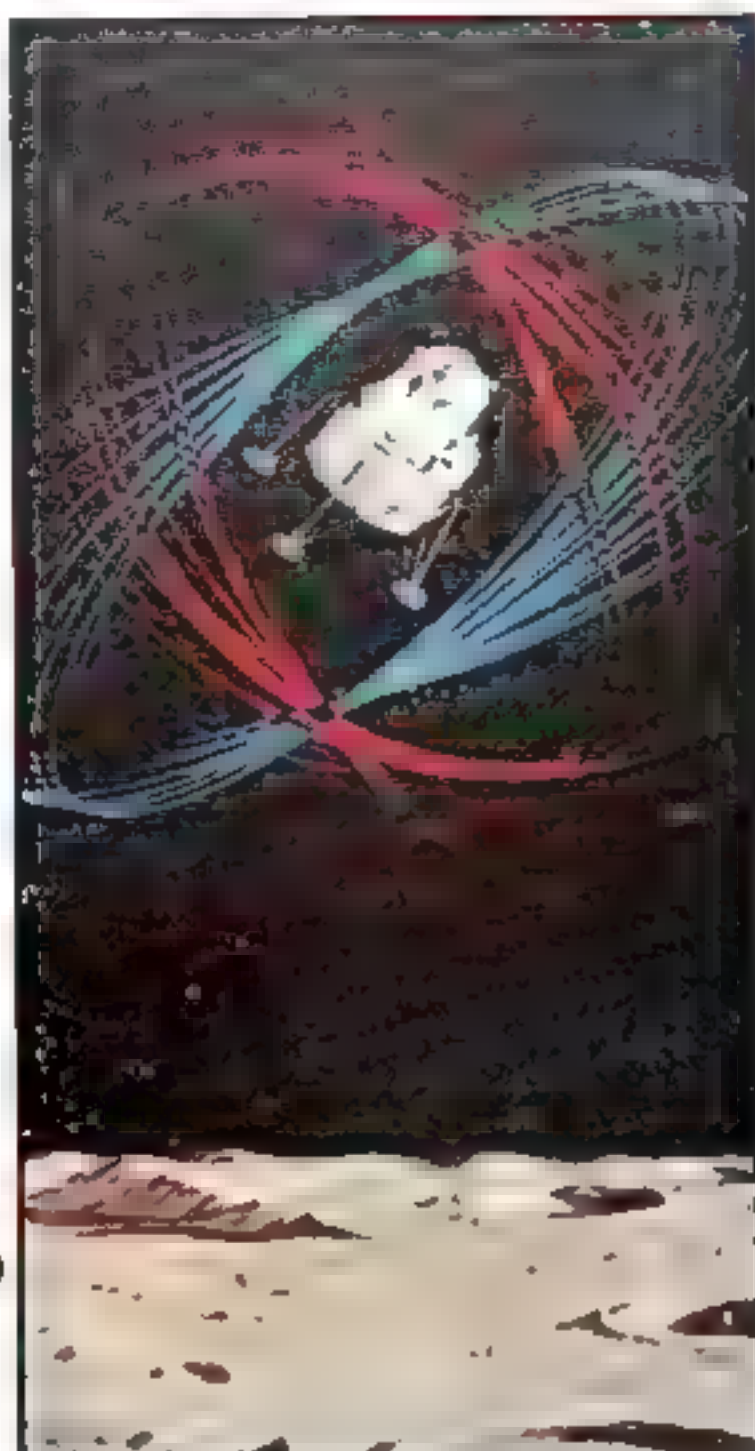
THE AGELESS MOON,
THE YOUNG APOLLO

SPACECRAFT
DEVELOPMENT IN
THE NEXT DECADE

FIRE TESTS ABOARD
THE APOLLO

LUNAR AND
PLANETARY SURFACE
ANALYSIS RESEARCH

SPACECRAFT PROPOSED
TO DISCOVER SECRETS
OF VAN ALLEN BELTS



SPACE WORLD

The magazine of space news

JUNE, 1968
VOL. 6-6-54

60c WISCO

Computer To Direct
Astronauts To Moon

Space Trends In
The 1970's



SPACE WORLD

The magazine of space news

JULY, 1968
VOL. 6-7-55

60c WISCO



TRAGIC DEATH OF YURI GAGARIN * SPACESHIP POWER "ON FULL"

PROGRESS OF SOVIET SPACE EXPLORATION

FLYING TAXIS FOR MOON EXPLORERS * FRANCE AIR AND SPACE

SPACE WORLD

The magazine of space news

AUGUST, 1968
VOL. 6-8-56

60c WISCO



LIFT IT UP TENDERLY * SPACE FLIGHT MILESTONES

VITALITY OF THE NATIONAL SPACE PROGRAM

SPACE WORLD

The magazine of space news

SEPTEMBER, 1968

VOL. 8-9-57

60c

WISCO



AUSTRALIAN SATELLITE SUCCESSFULLY PUT INTO ORBIT

NASA'S NIMBUS B



THE MISSION OF THE LUNAR MODULE

SPACE WORLD

The magazine of space news

OCTOBER, 1968

VOL. 8-10-58

60c

WISCO

SATELLITE WORKS OP

APOLLO SERVICE
PROPULSION ROCKET
ENGINE

THE LUNAR COPTER
LUNAR EXPLORATION
AND

TOMORROW'S SOCIETY
AND THE
AEROSPACE INDUSTRY

WORLD'S LATEST
COMMUNICATIONS
SATELLITE



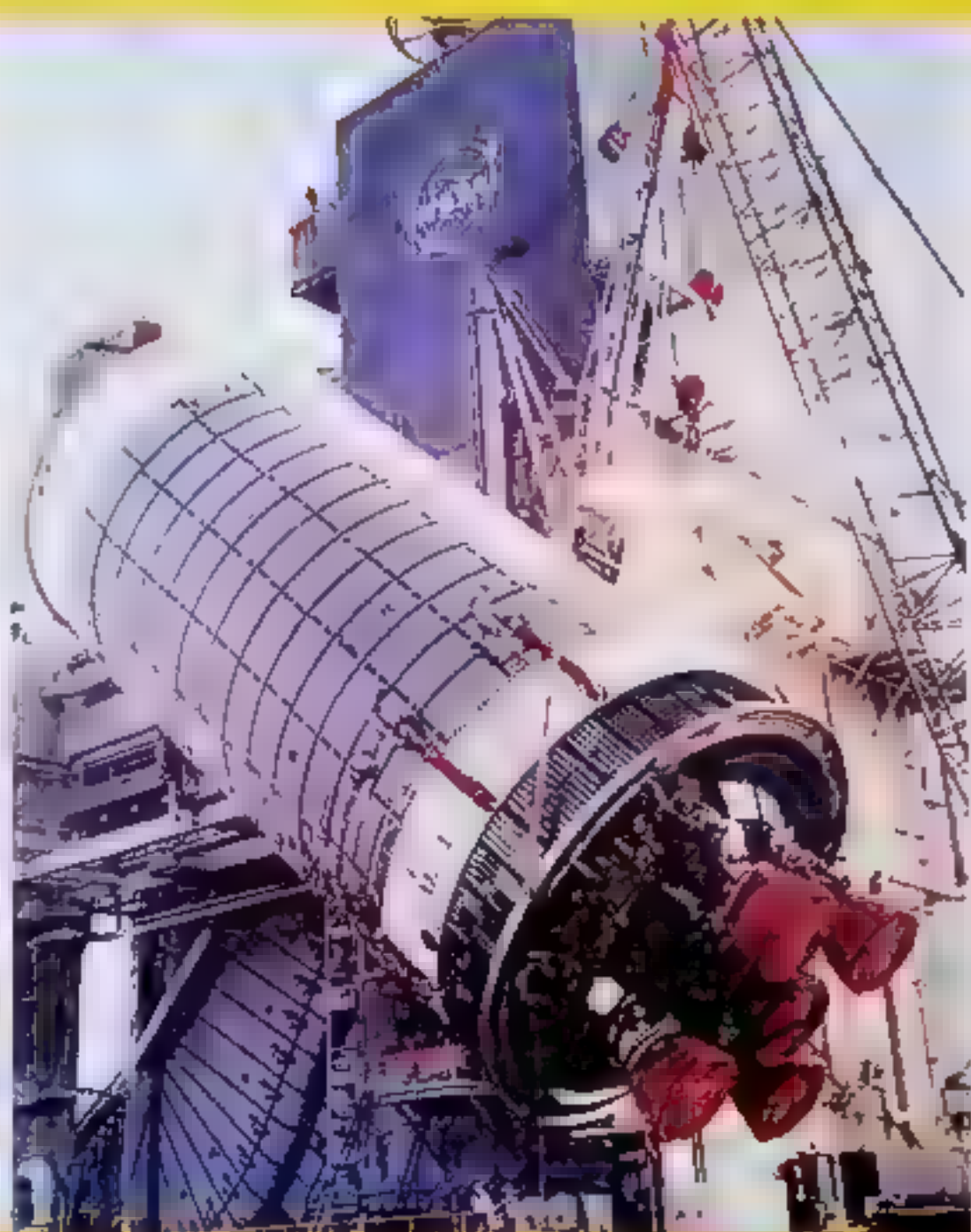
SPACE WORLD

The magazine of space news

VOL. 8-11-59

60c

WISCO



NEW THAILAND SATELLITE COMMUNICATIONS STATION

SPACECRAFT DETAILS

NASA'S MIRACLE MACHINES

SPACE WORLD

The magazine of space news

DECEMBER, 1968

VOL. 8-12-59

60c

WISCO

BODY-CONTROLLED
POGO VEHICLE

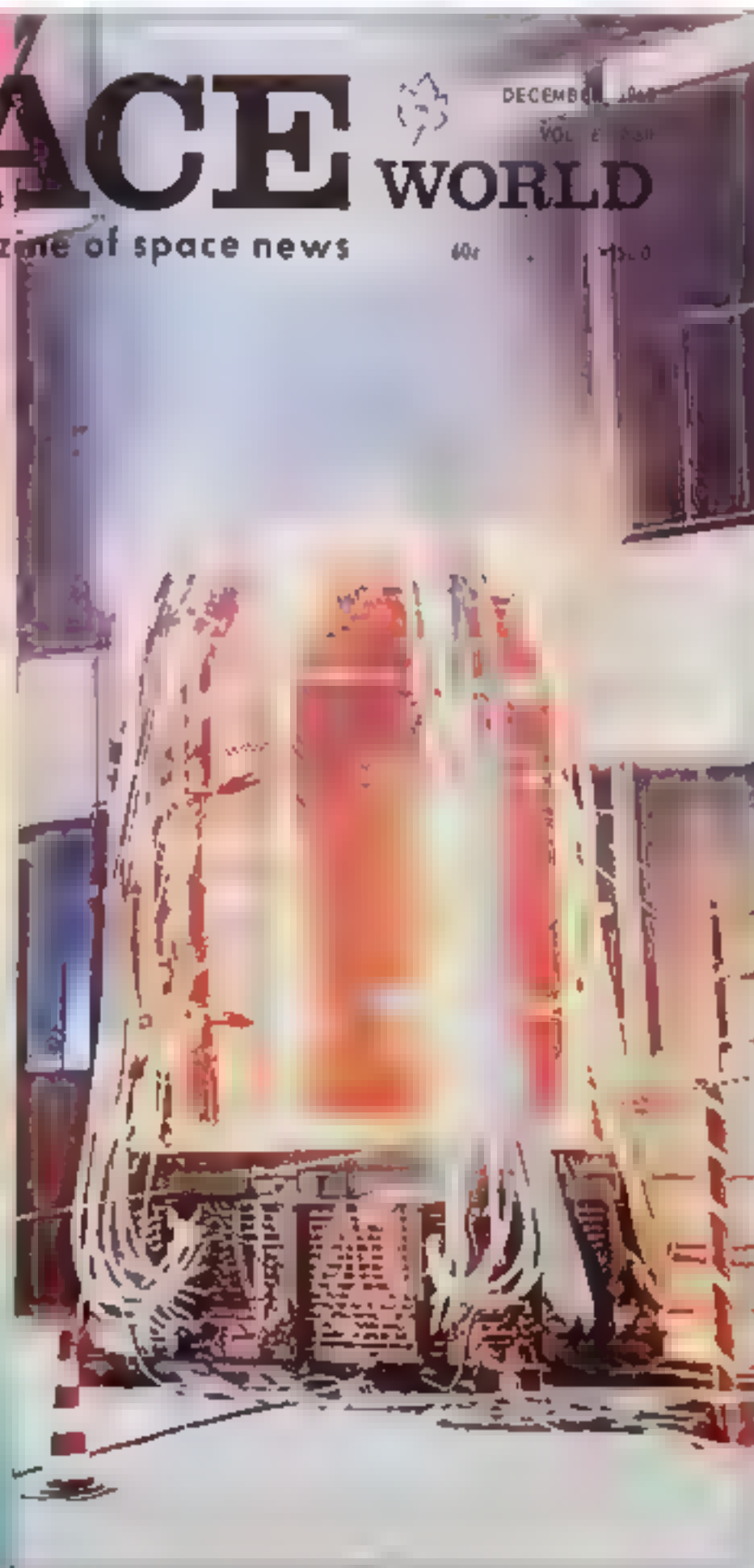
THE USSR IN SPACE:
1957-67

THE MEN OF APOLLO

PURE WATER FOR
ASTRONAUTS

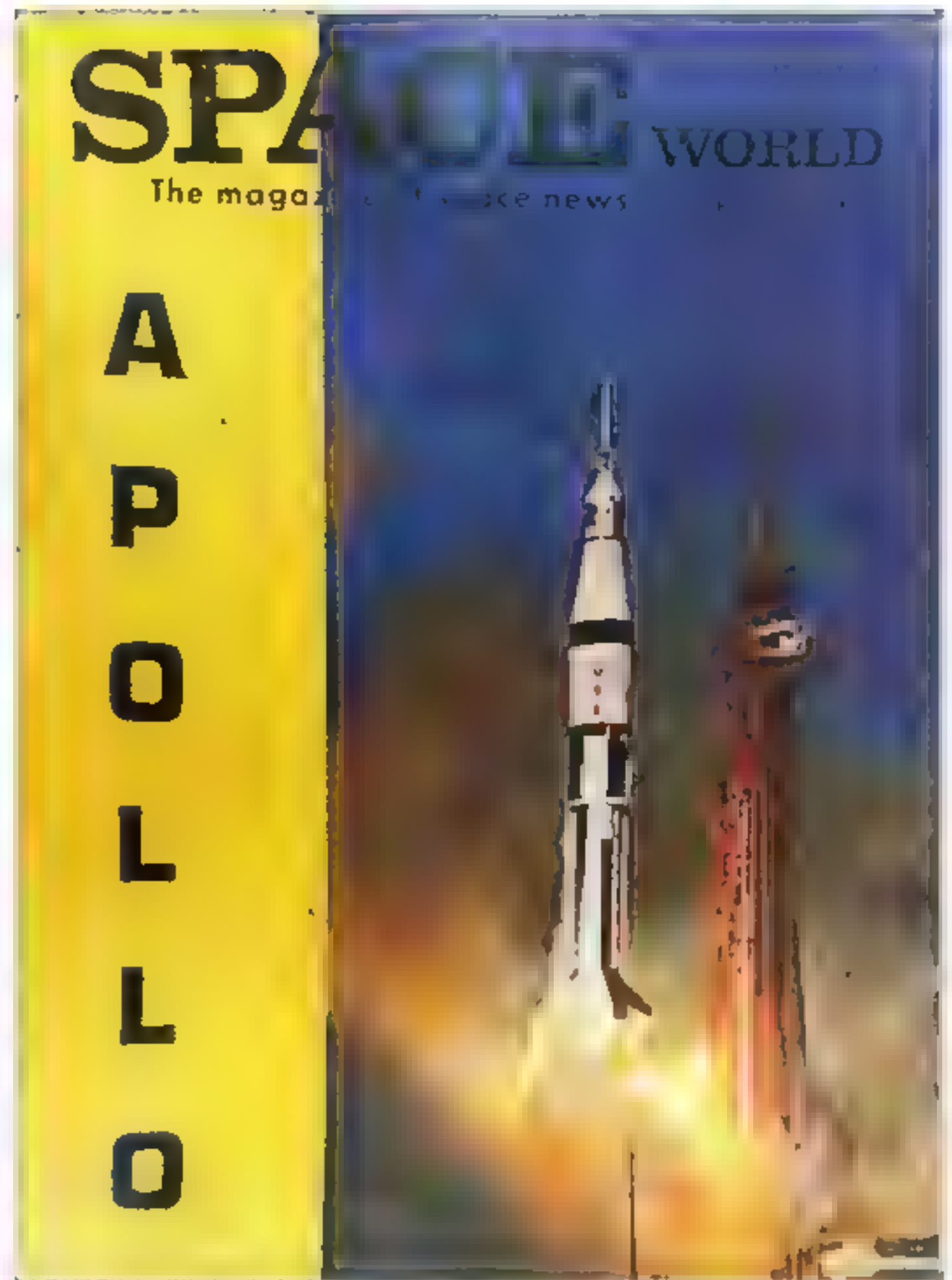
EXPLORERS OF THE
UNIVERSE

NEW ATHENA "H"
MISSILE



SPACE WORLD

1969



SPACE WORLD

The magazine of space news

MAY, 1969
VOL. F-5-45

60c \$5.00



TELCOMSAT—WORLD'S LARGEST SATELLITE
ANTARCTIC RESEARCH, A PRELUDE TO SPACE RESEARCH

SPACE WORLD

The magazine of space news

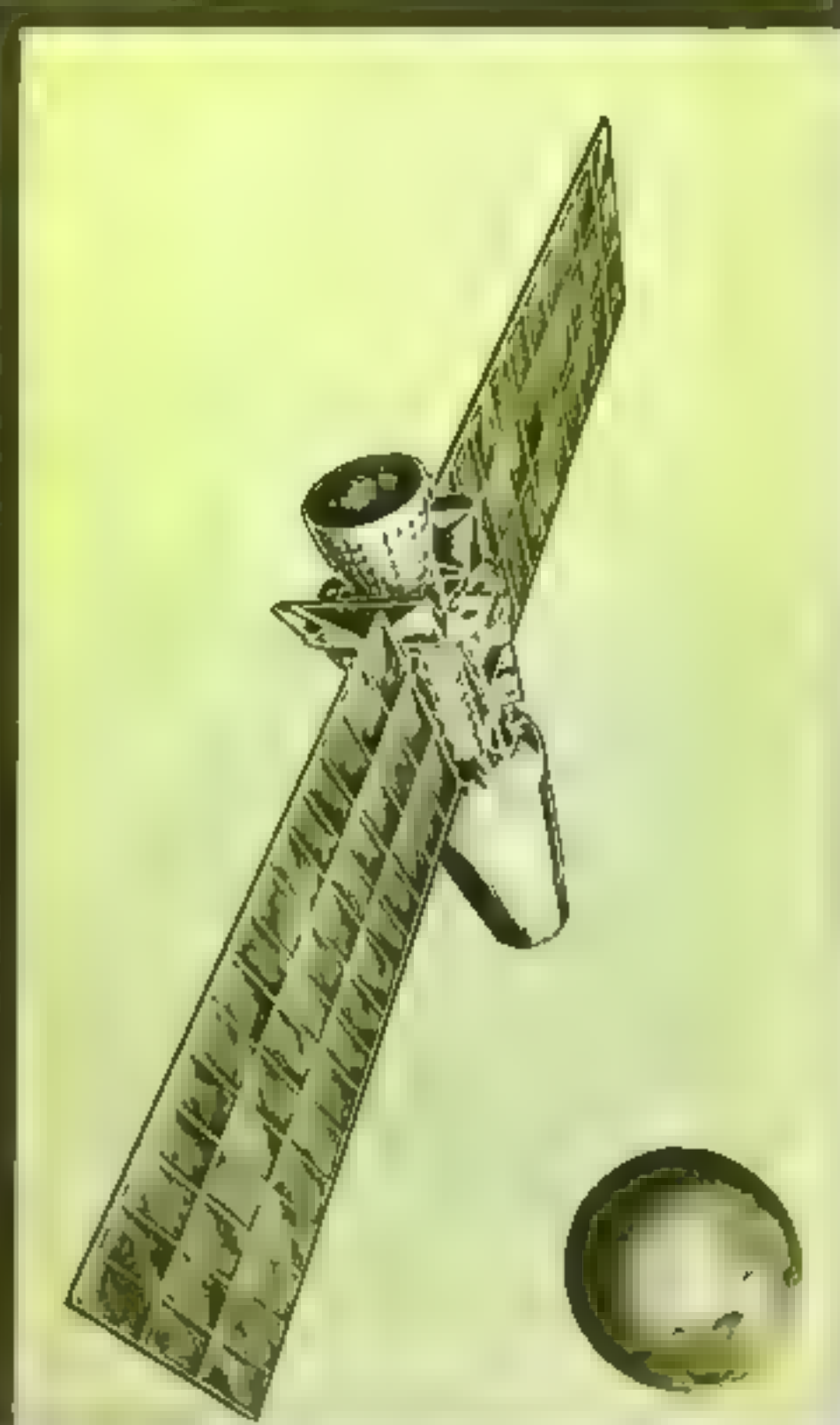
**TWO MARINERS
ON WAY TO MARS**

**ION ENGINE TO BE
TESTED IN ORBIT**

**WATER IN
SPACE TRAVEL**

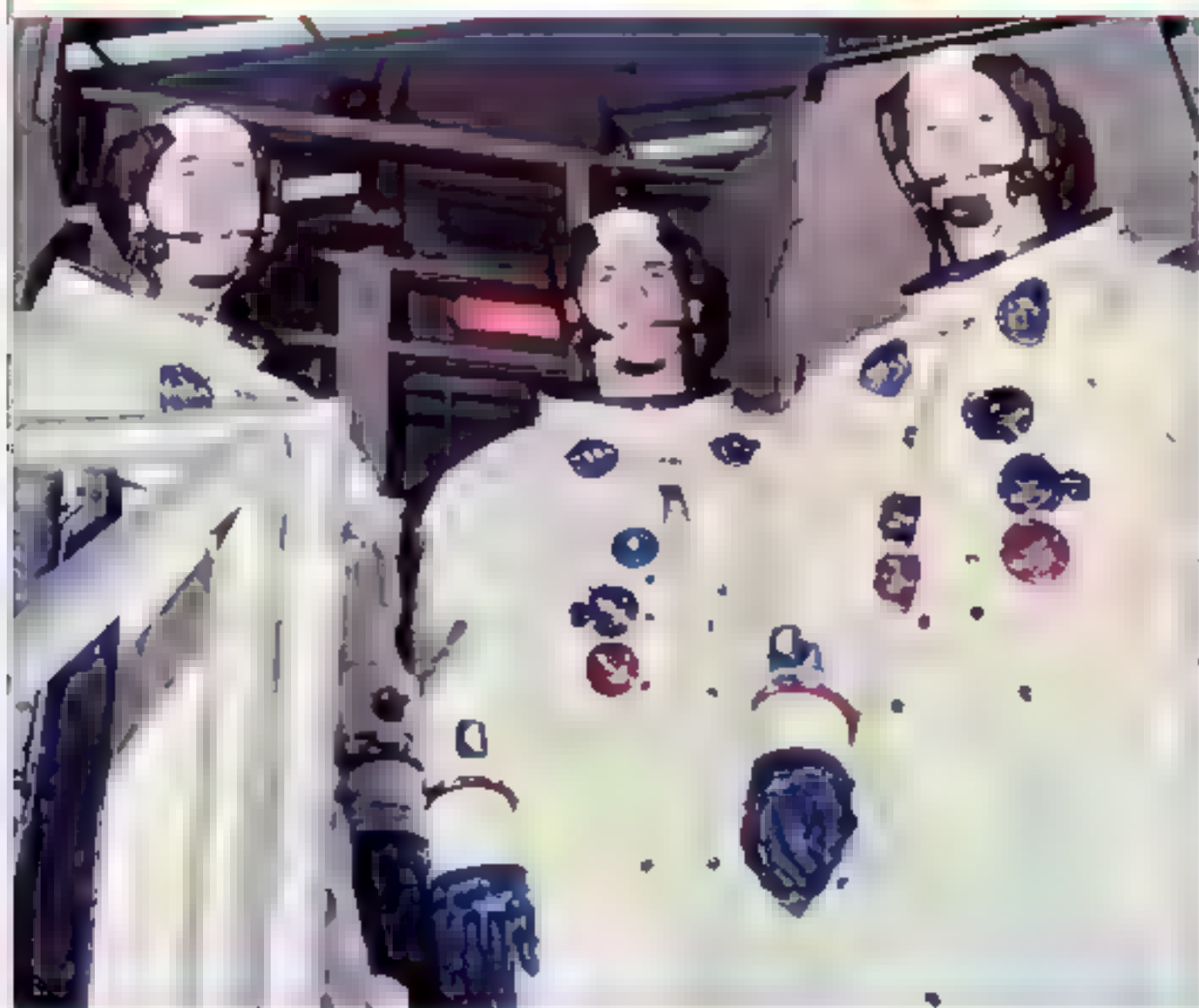
**PROSPECTING
FROM SPACE**

**SIMILARITIES IN
MARS, VENUS
AND EARTH**



SPACE WORLD

The magazine of space news



APOLLO SATURN LUNAR LANDING PROGRAM

THE ACCOMPLISHMENTS OF NIMBUS II
AUTOMATIC PROBES EN ROUTE TO VENUS

SPACE WORLD

The magazine of space news



**ROCKET SCIENCE FOR THE
SEEKING THE INSIDE
PROBLEMS OF SPACE**

SPACE WORLD

The magazine of space news

SEPTEMBER, 1969
VOL. F-4-69

60c WISCO

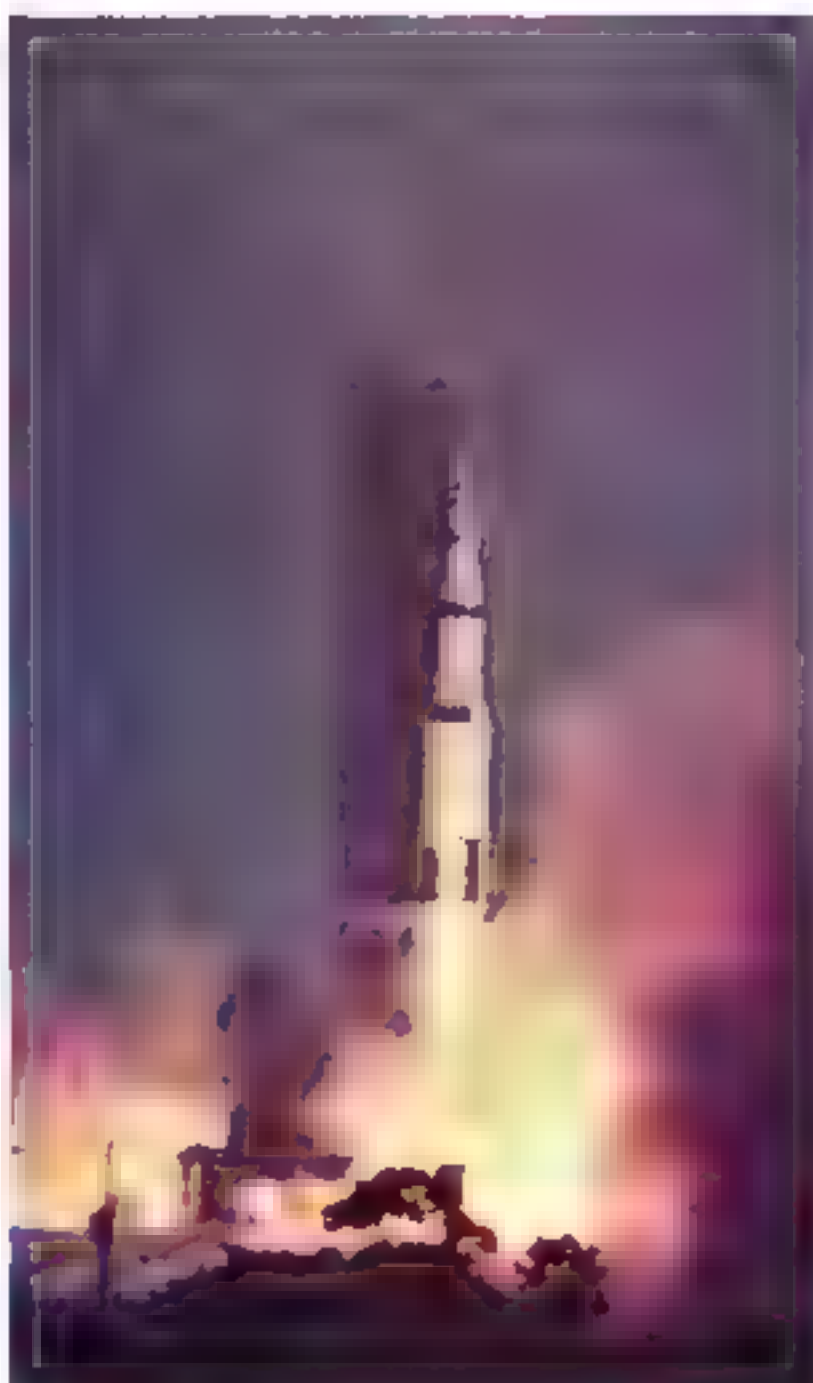
BIOSCIENCE
PROGRAMS
IN SPACE

THE ORBITER
REFRAIN

HOME IS
200 MILES UP

BITS OF
ANOTHER
WORLD

THE
SIGNIFICANCE
OF APOLLO

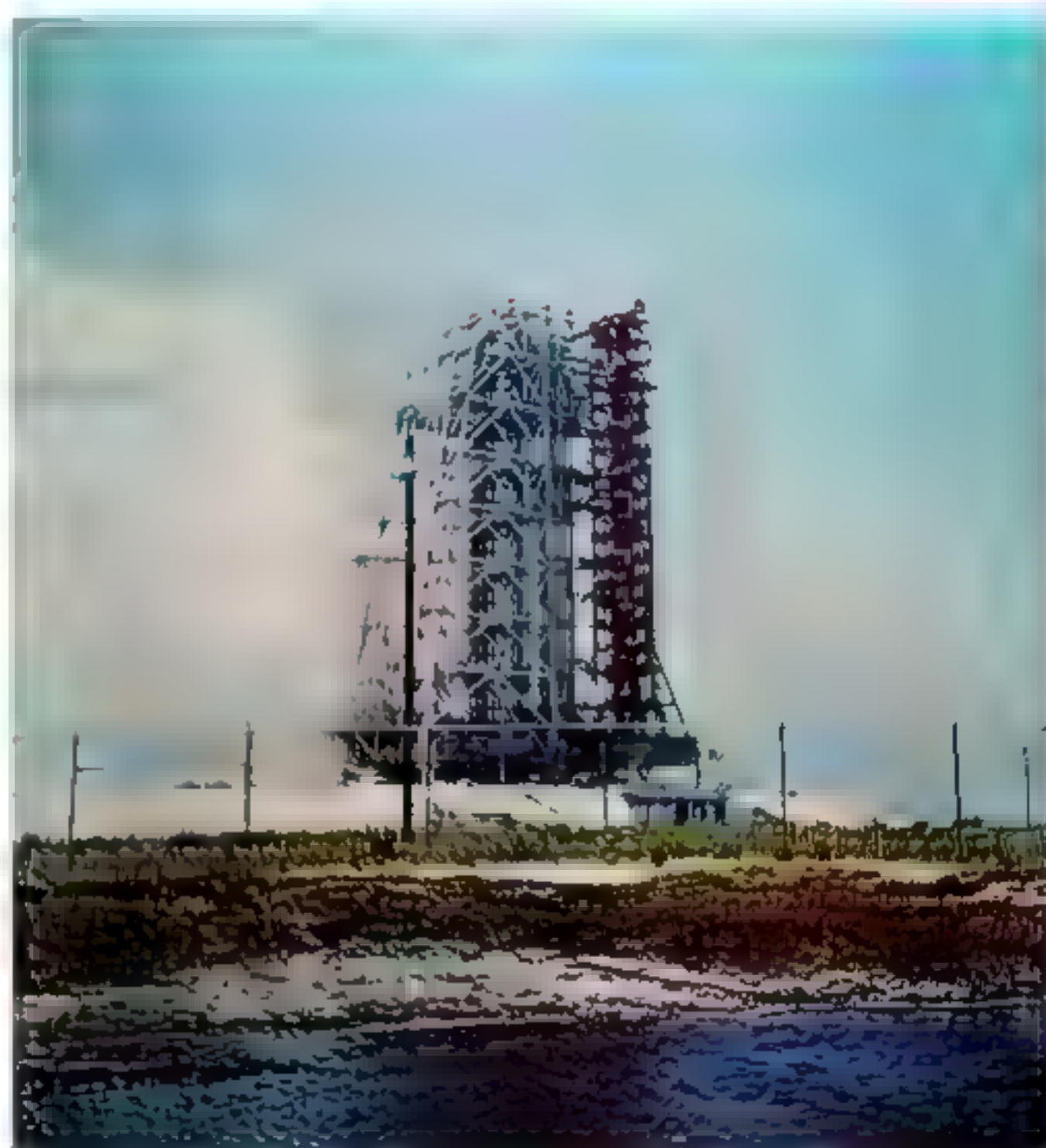


SPACE WORLD

The magazine of space news

OCTOBER, 1969
VOL. F-10-70

60c WISCO



SPACE WORLD

The magazine of space news

NOVEMBER, 1969
VOL. F-11-71

60c WISCO



SPACE WORLD

The magazine of space news

DECEMBER, 1969
VOL. F-12-72

60c WISCO



Album—Full color picture story of MAN ON THE MOON

SPACE WORLD

1970

SPACE WORLD

The magazine of space news

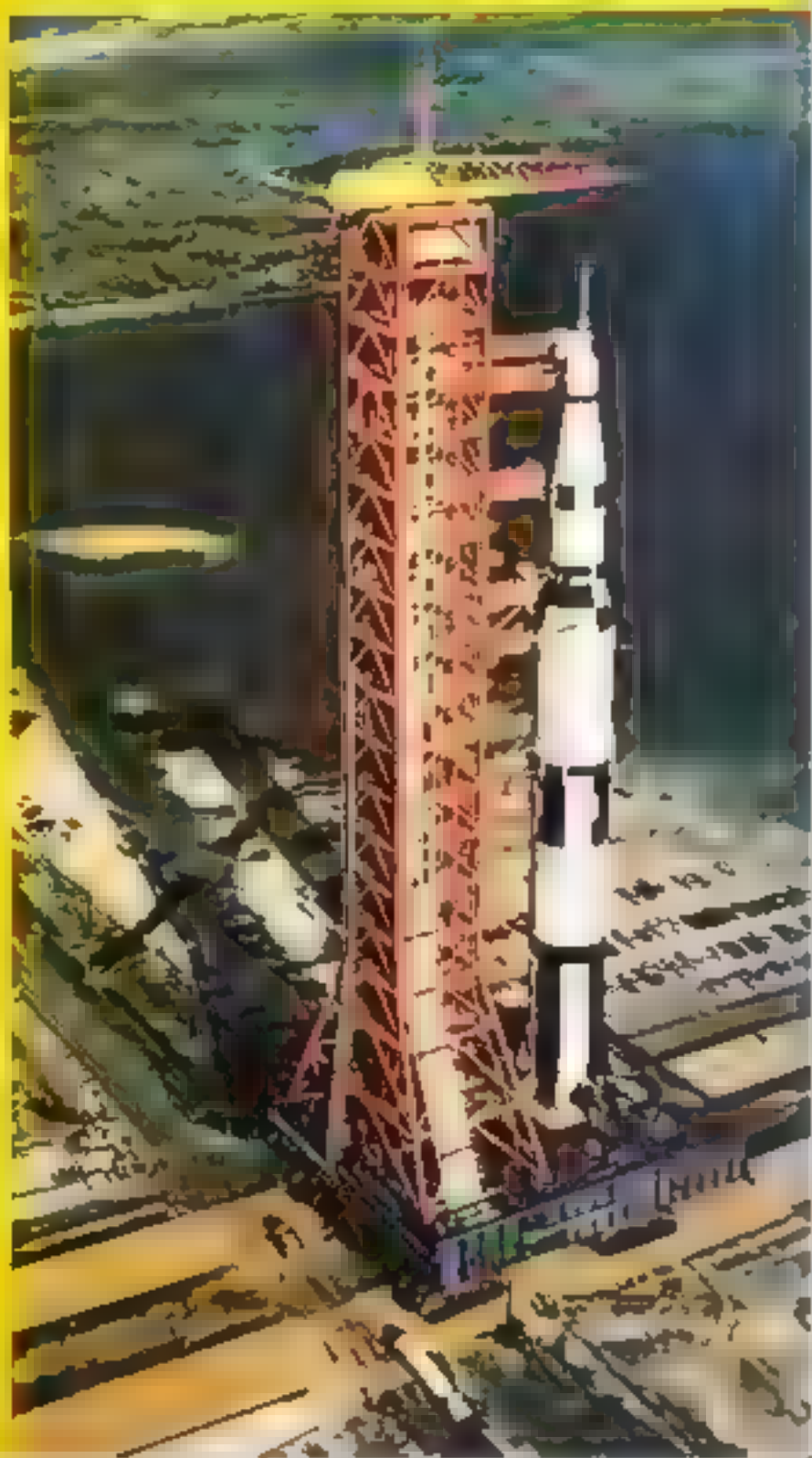
Apollo 12 Landing
Site and Goals

Snap 27—
Electricity On
The Moon

The Fourth ESRO
Satellite

German Satellite
Launch

A bum—
APOLLO LUNAR
MODULE



SPACE WORLD

The magazine of space news



SPACE WORLD

The magazine of space news



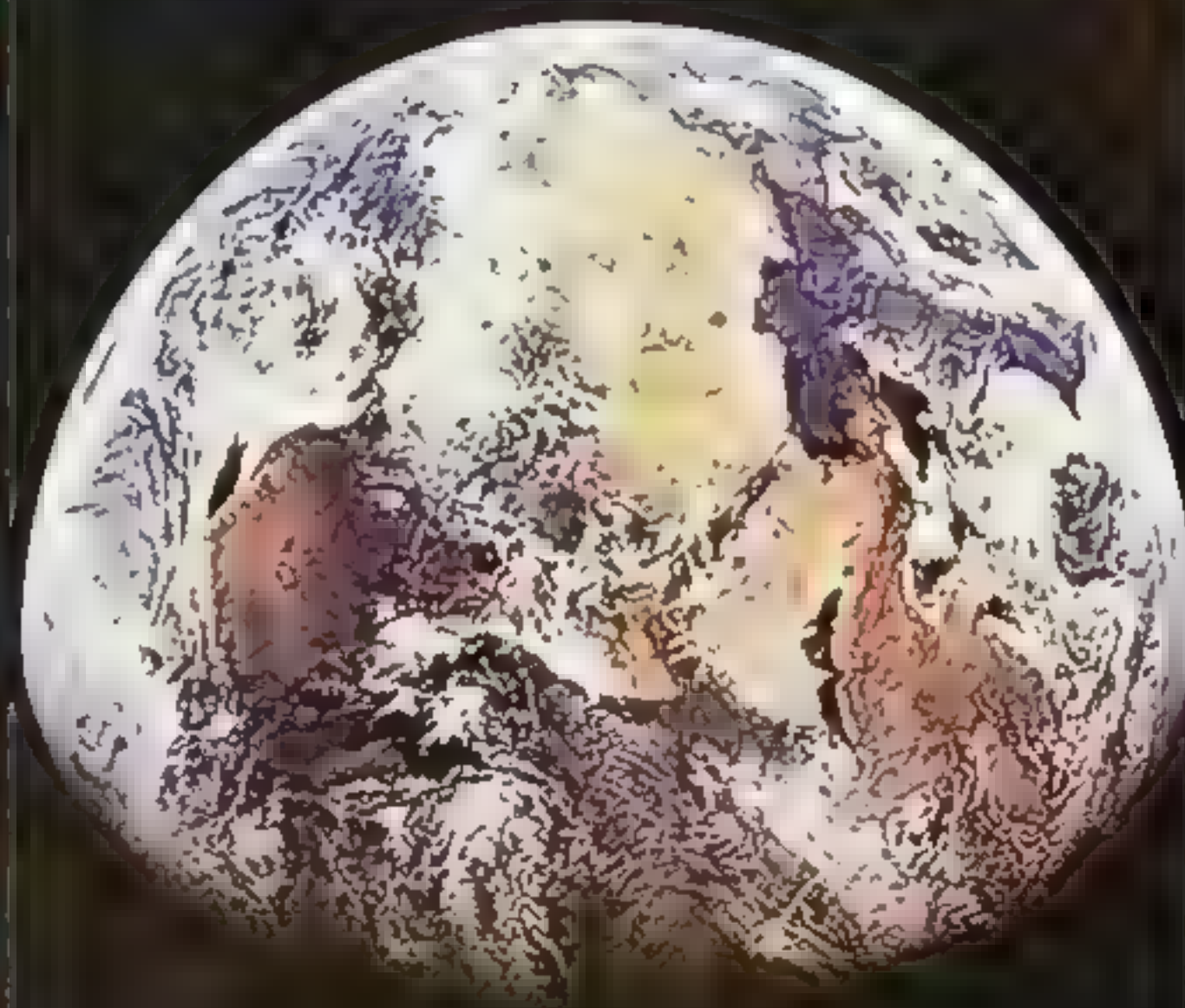
SPACE STATION TO HELP MAN STUDY HIS SURROUNDINGS

SATURN V WORKSHOP

20 YEARS TO THE MOON

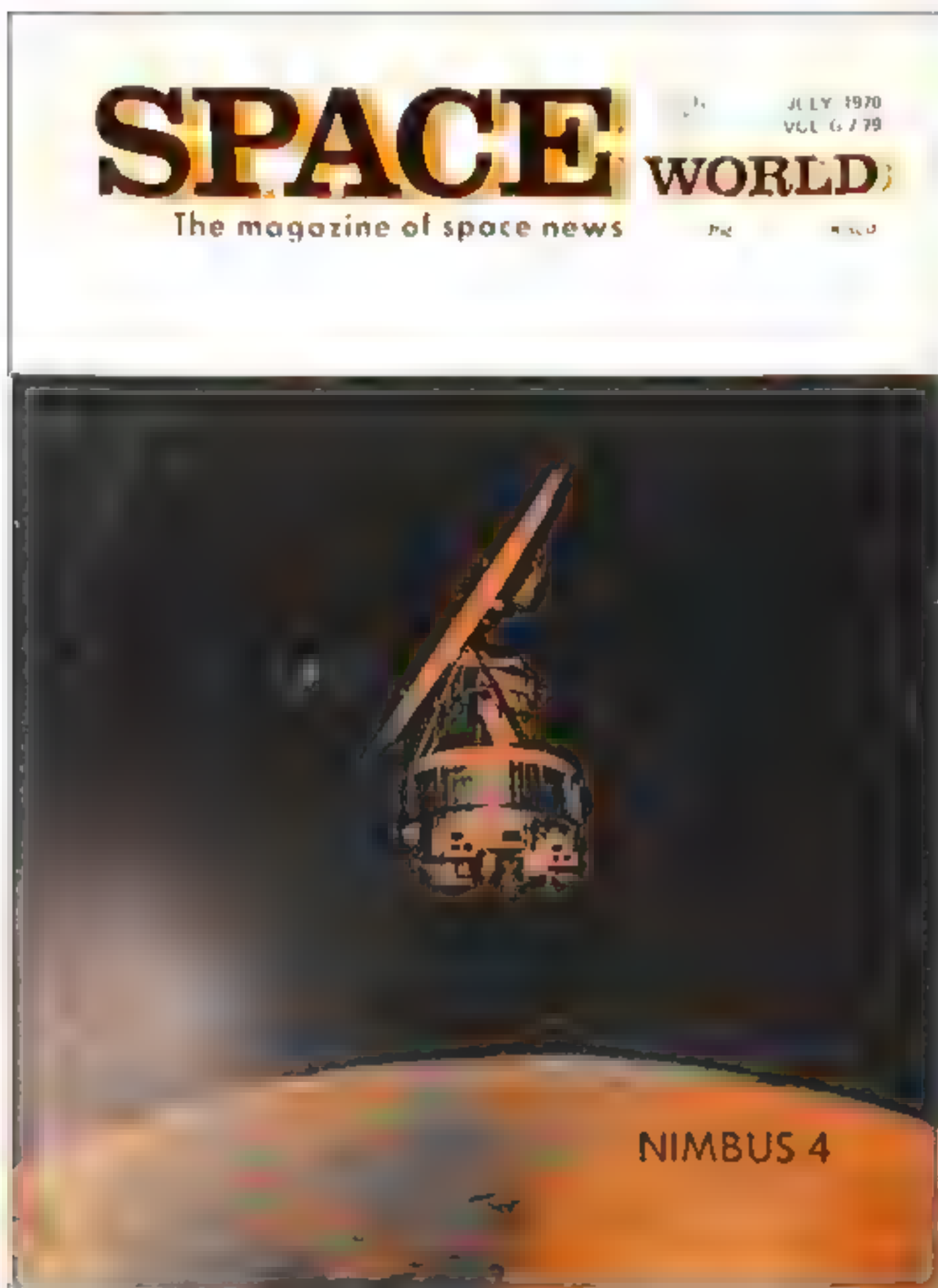
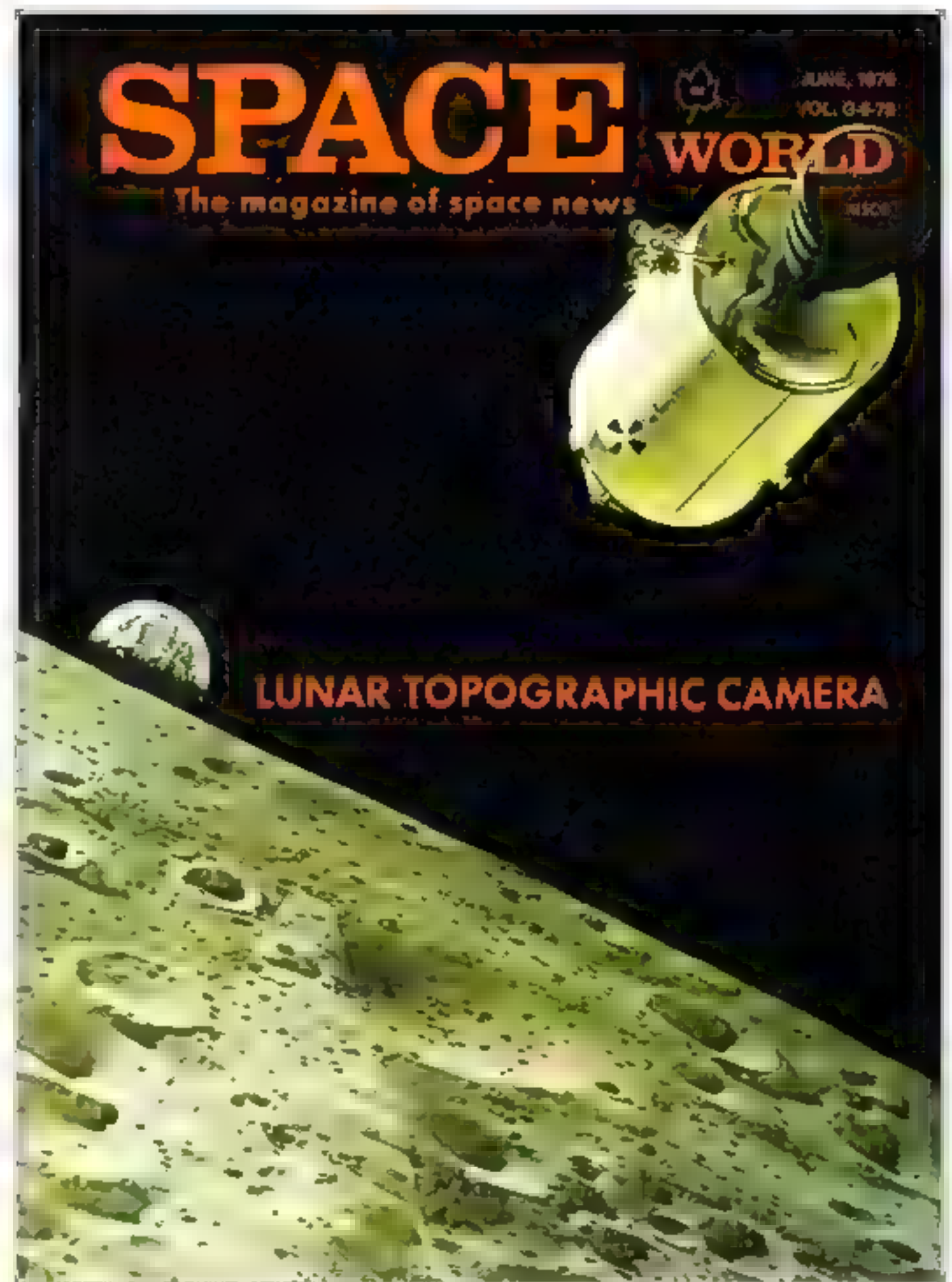
SPACE WORLD

The magazine of space news



THE MANNED TELESCOPE * THE MOON CAMERAS

DEVELOPING AN UNMANNED ANTARCTIC GEOPHYSICAL STATION



SPACE WORLD

The magazine of space news



SEPTEMBER 1970
VOL. G-9-81

75¢

WILEY



TIROS-M, NEW ERA IN GLOBAL WEATHER PREDICTION

HOW LUNAR DRILL WILL WORK

MARS PHOTO ALBUM

THE APPLICATIONS TECHNOLOGY SATELLITE PROGRAM

SPACE WORLD

The magazine of space news



OCTOBER 1970
VOL. G-10-82

75¢

WILEY



WHAT REALLY HAPPENED TO APOLLO 13

NASA "ASTRONAUTS" TAKE A DIVE

TWO CONCEPTS FOR NUCLEAR SHUTTLE

THE USSR's MAP AND GLOBE OF THE MOON

SPACE WORLD

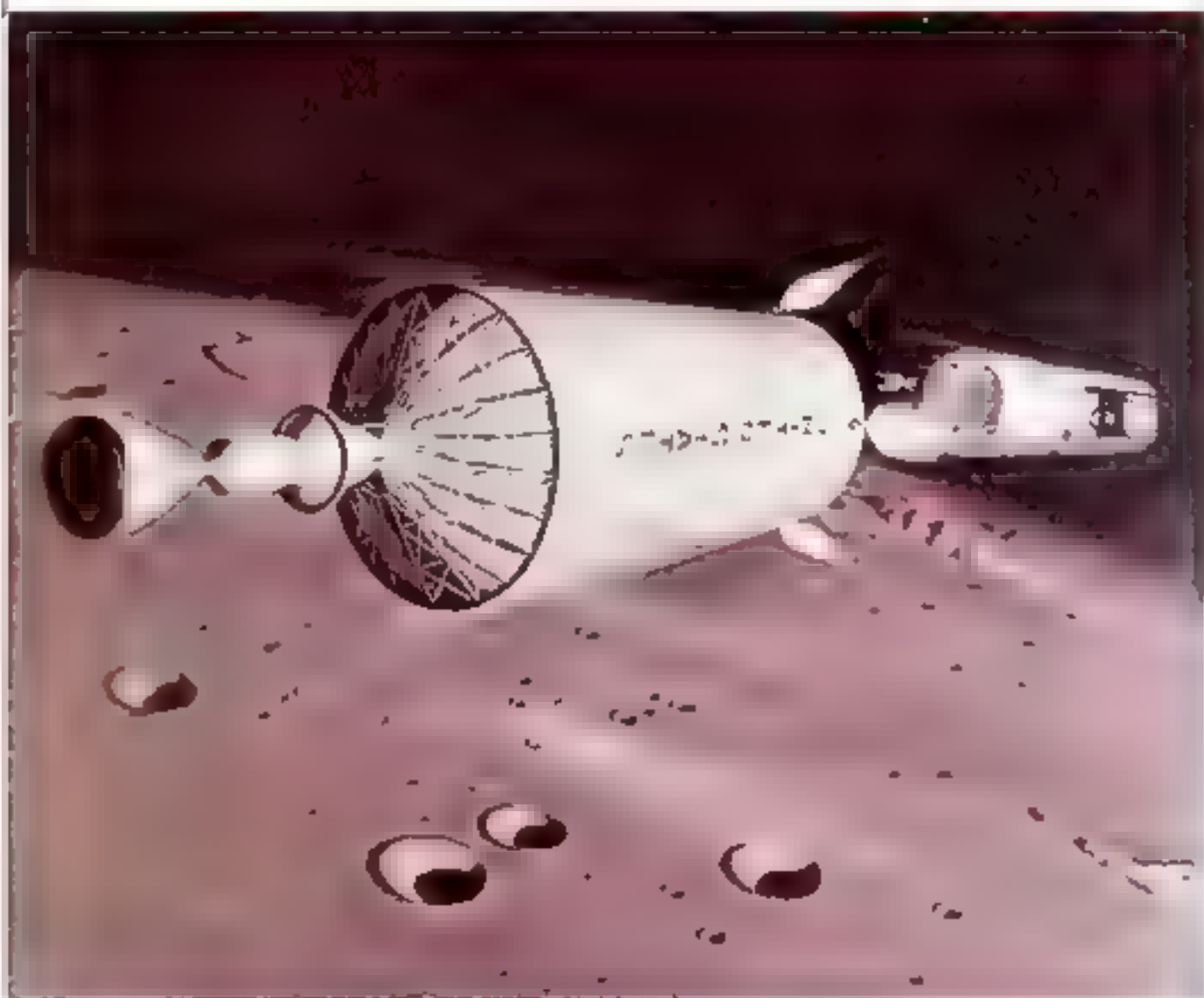
The magazine of space news



NOVEMBER 1970
VOL. G-11-83

75¢

WILEY



THE NERVA NUCLEAR ROCKET REACTOR

SPACE EXPLORATION IN THE 70s

THE ORBITING FROG OTOLITH

SPACE WORLD

The magazine of space news



DECEMBER 1970
VOL. G-12-84

75¢

WILEY



SPACE WORLD

1971

SPACE WORLD

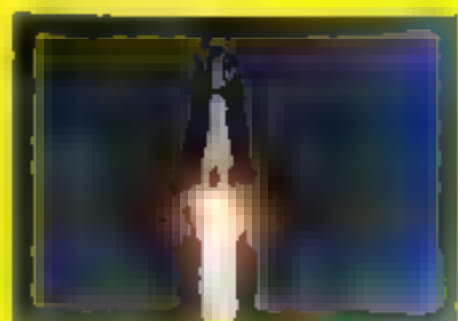
The magazine of space news



VOSTOK



SOYUZ



VOSTOK



SOYUZ



VOSTOK



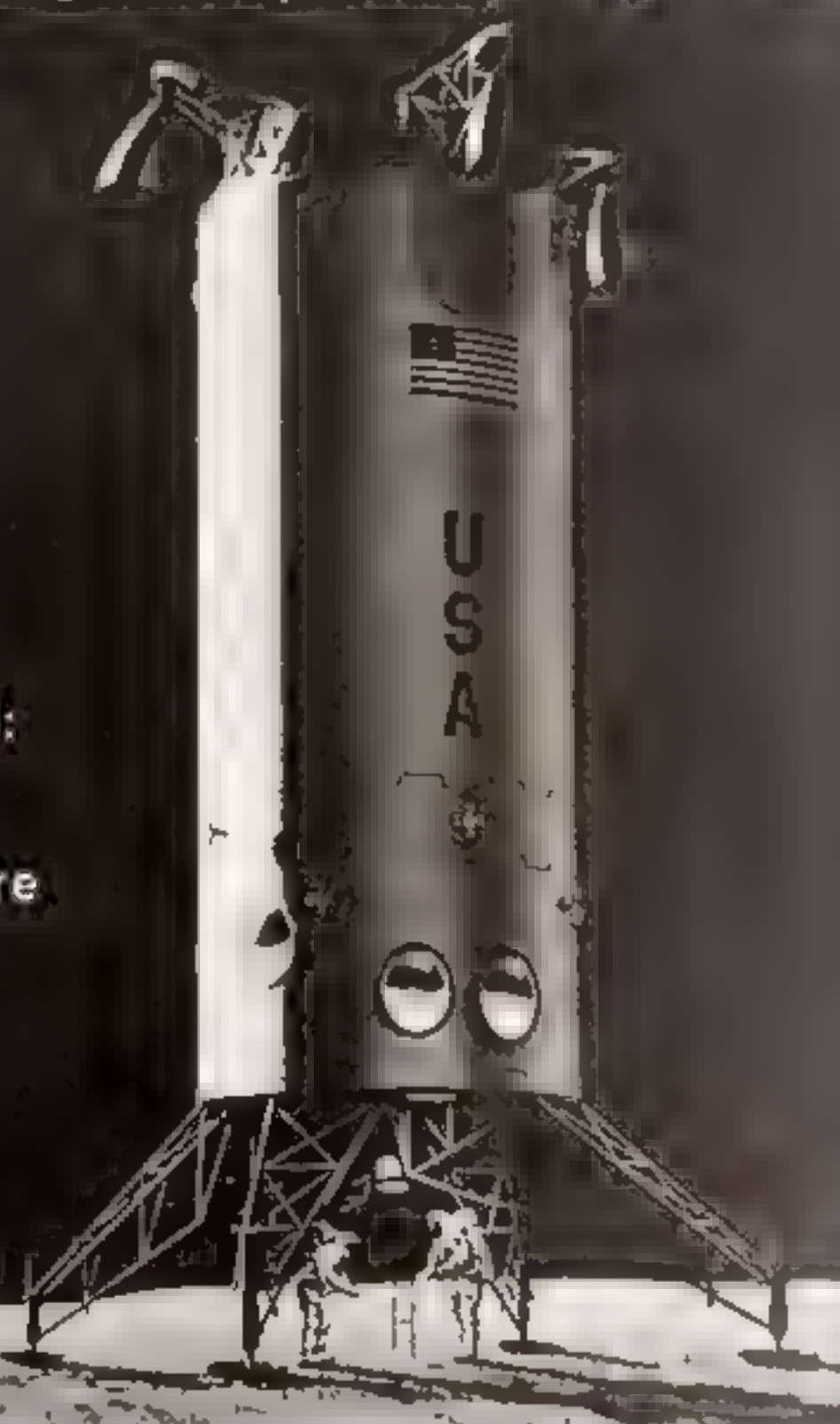
SOYUZ

SPACE WORLD

The magazine of space news

FEBRUARY, 1971
VOL. 11-2-81

SPACE
STATION:
Key To
The Future



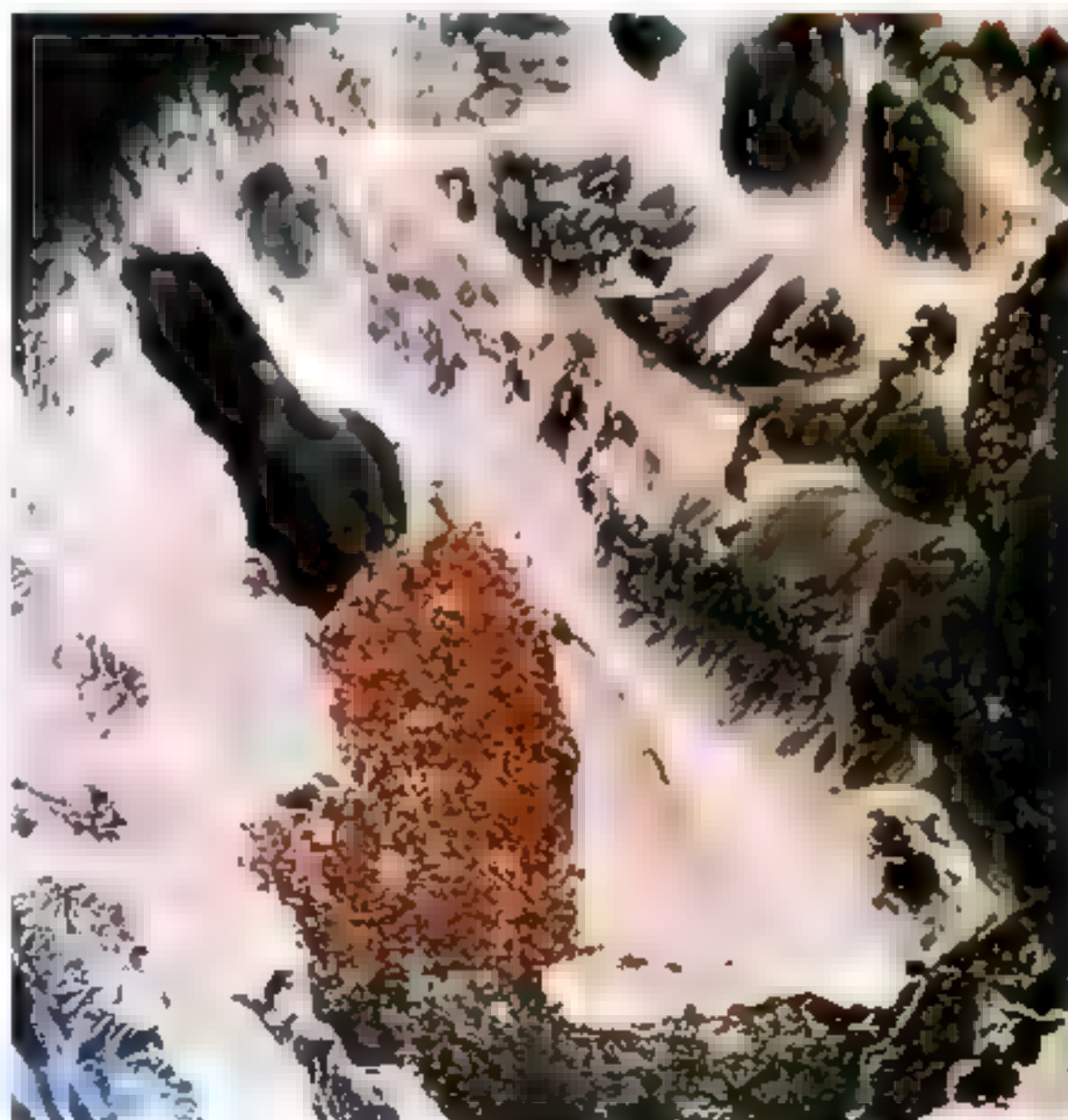
SPACE WORLD

The magazine of space news

75c

WISCO

MARCH, 1971
VOL. 11-3-87



The Imperial Valley of southern California as photographed in color infrared from Apollo 9.

PHOTO STORY OF 1981 MARS MISSION
SKYLAB-12-MAN ORBITING SPACE STATION

SPACE WORLD

The magazine of space news

75c

WISCO

APRIL, 1971
VOL. 11-4-88

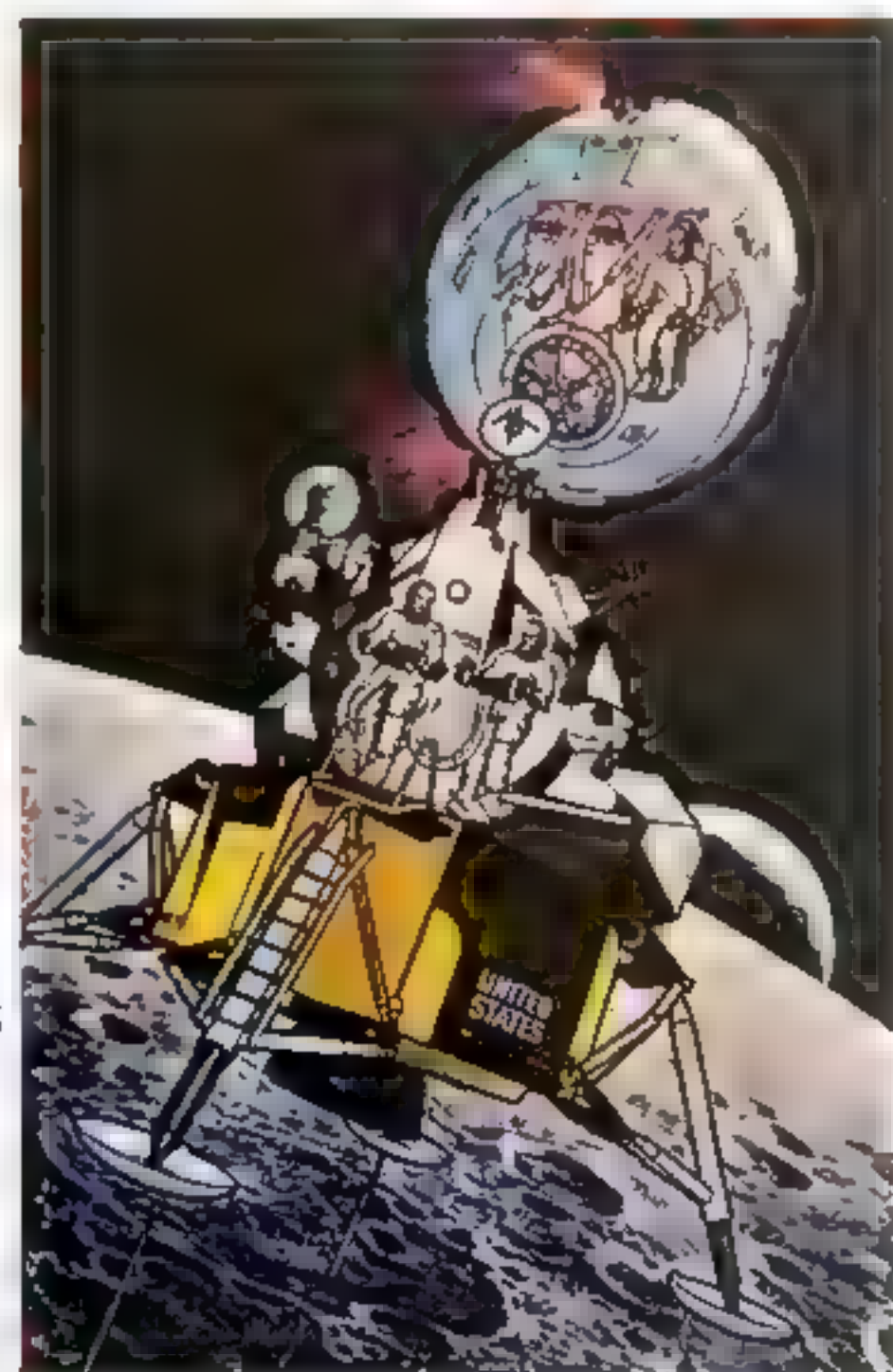
INTELSAT IV

ONCE A
FIGHTER
PILOT...

QAO-B

SPACE
SCIENCE
AND
APPLICATIONS

EINSTEIN
THEORY
UPHELD



SPACE WORLD

The magazine of space news

MAY 1971
VOL. 11 # 5 89

75¢

WISCO

ROCKETRY'S
AGELESS
WONDER

TAKE-OFF
FOR
THE
MOON

LUNOKHOD 1

DOCKING
THE
APOLLO



SPACE WORLD

The magazine of space news

JUNE 1971
VOL. 11 # 6 90

75¢

WISCO

EXPLORER 43

SPACE SHUTTLE

SOVIETS
MARK 10th
ANNIVERSARY
OF YURI
GAGARIN'S
SPACEFLIGHT

PLANET ROVERS
OF THE FUTURE



Album:

SOVIET COSMONAUTS AND SATELLITES

SPACE WORLD

The magazine of space news

JULY 1971
VOL. 11 # 7 91

75¢

WISCO



MARINER MARS 1971 LAUNCHES

SPACE WORLD

The magazine of space news

AUGUST, 1971
VOL. 11 # 8 92

75¢

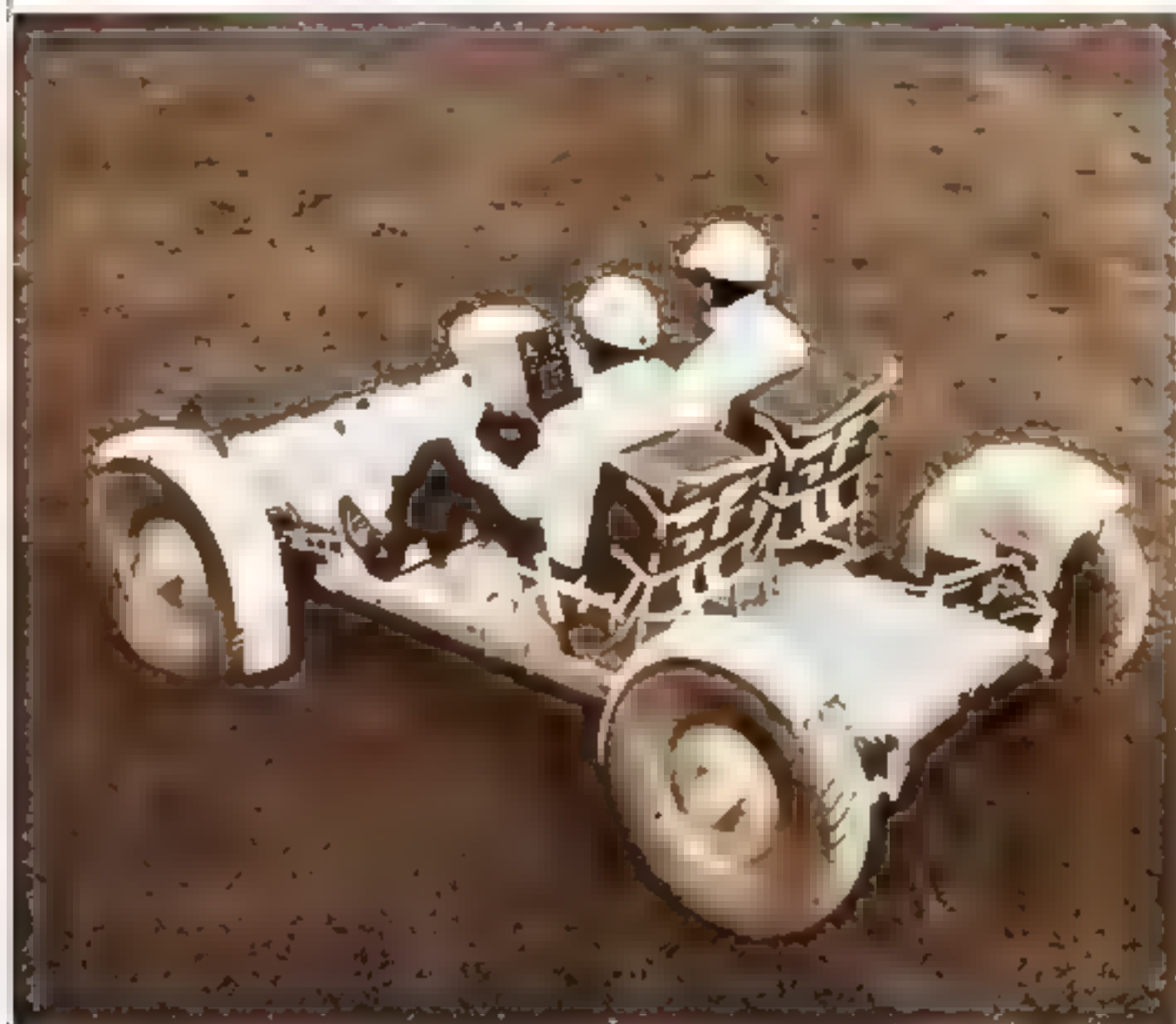
WISCO



SPACE WORLD

The magazine of space news

SEPTEMBER, 1971
VOL. 4-9-93
75¢ WISCN



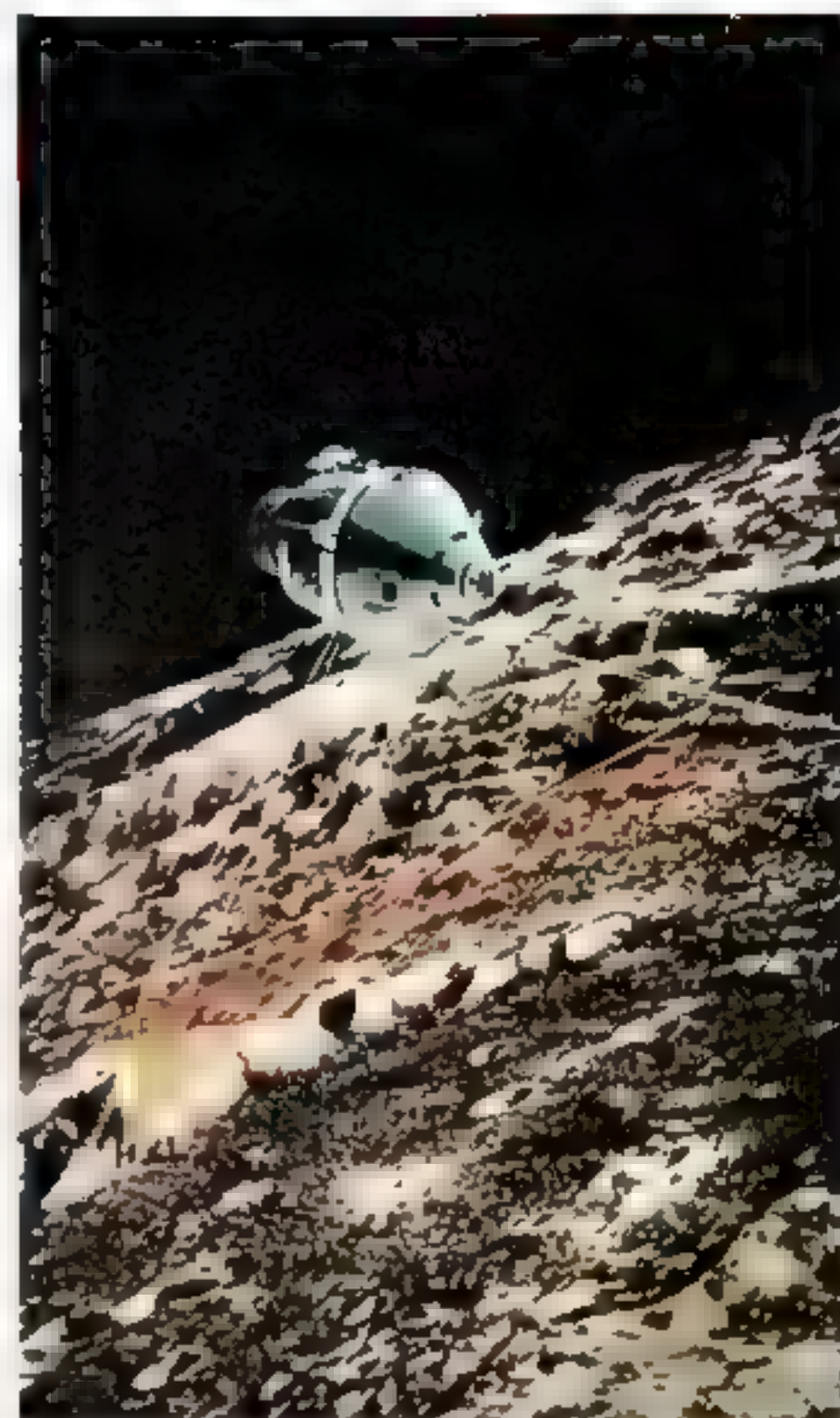
MOON TIRES ARE FLAT TIRES ON EARTH
THE SALUTE—MAN'S FIRST MANNED ORBITAL STATION

SPACE WORLD

The magazine of space news

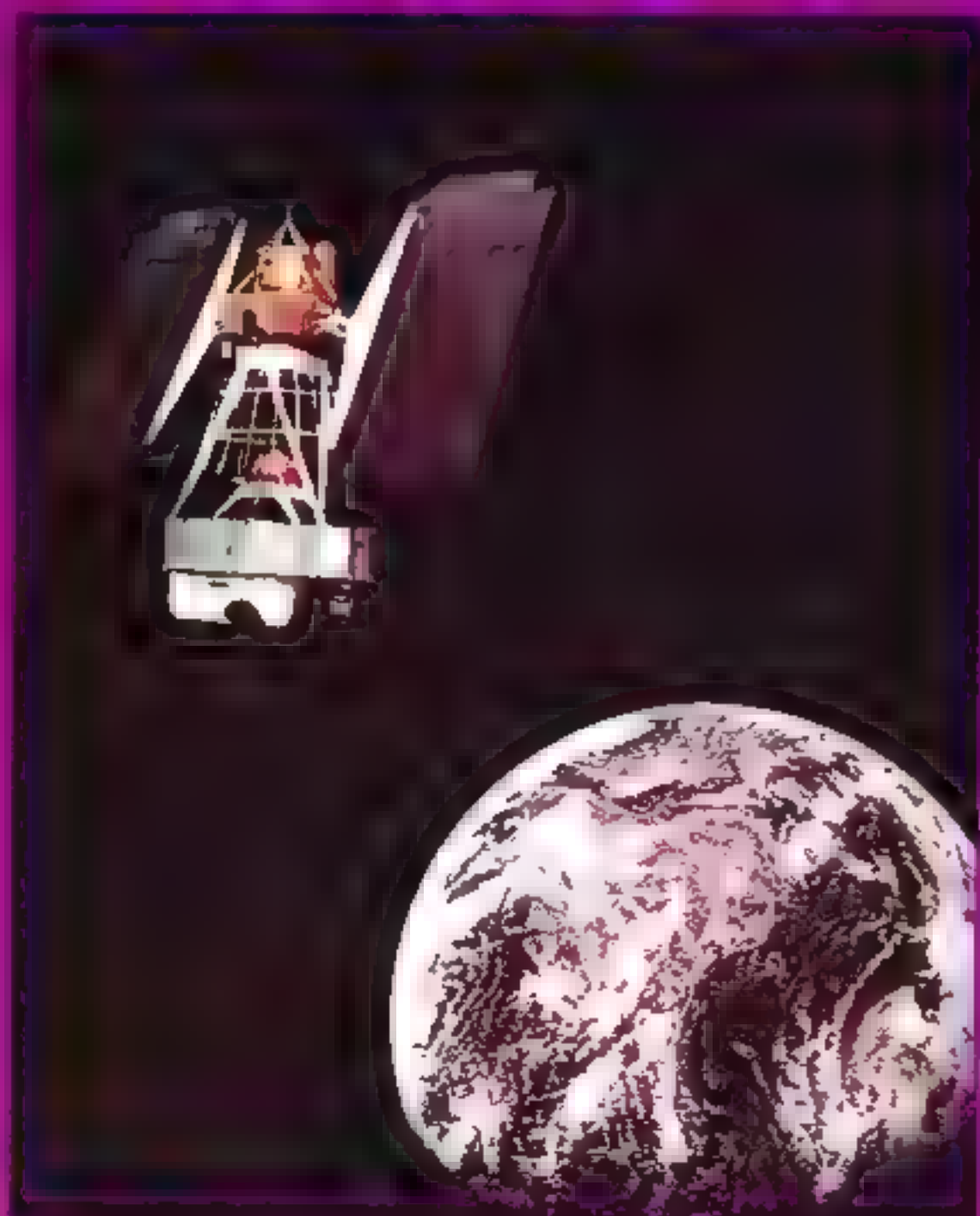
OCTOBER, 1971
VOL. 4-10-94
75¢ WISCN

ON
THE
MOON
WITH
APOLLO
15



SPACE WORLD

The magazine of space news



SPACE WORLD

The magazine of space news

DECEMBER, 1971
VOL. 4-12-95
75¢ WISCN

OSO-7

LUNAR ROVING VEHICLE



SPACE WORLD

1972

SPACE WORLD

The magazine of space news

JANUARY 1972
VOL. 13-97



MARINER 9 STUDIES MARS
FRENCH WEATHER SATELLITE LAUNCH
NASA TO SURVEY EARTH'S RESOURCES

SPACE WORLD

The magazine of space news

FEBRUARY 1972
VOL. 13-98



MISSION TO MARS
SMALL SCIENTIFIC SATELLITE TO BE LAUNCHED

SPACE WORLD

The magazine of space news

MARCH 1972
VOL. 13-99



SPACE WORLD

The magazine of space news

APRIL 1972
VOL. 14-100

THE
TOTAL
STORY
OF
APOLLO



SPACE WORLD

MAY, 1972
VOL. 1-5-101

The magazine of space news

75¢

WISCO



THE TOTAL STORY OF APOLLO

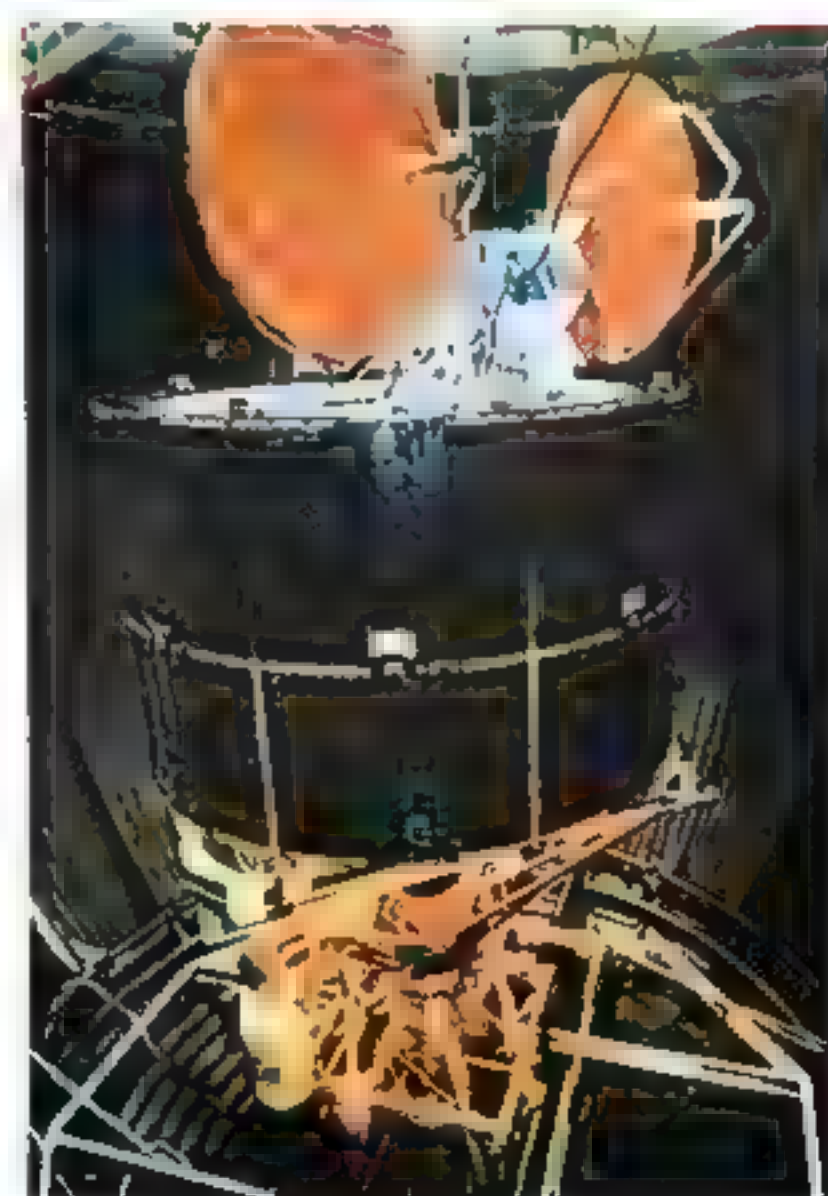
SPACE WORLD

JUNE, 1972
VOL. 1-6-102

The magazine of space news

75¢

WISCO



THE TOTAL STORY OF APOLLO

SPACE WORLD

The magazine of space news



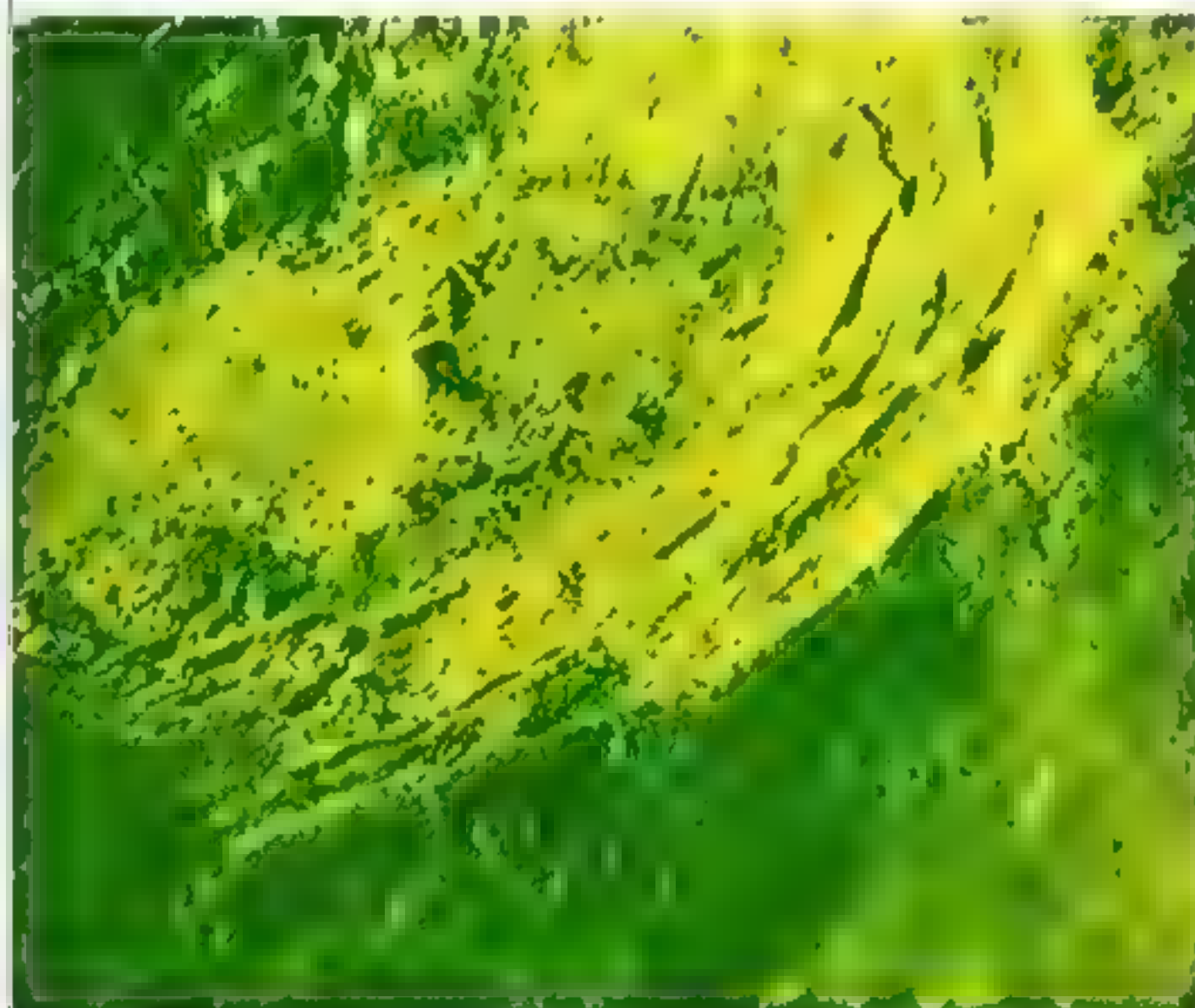
SPACE WORLD

AUGUST, 1972
VOL. 1-8-104

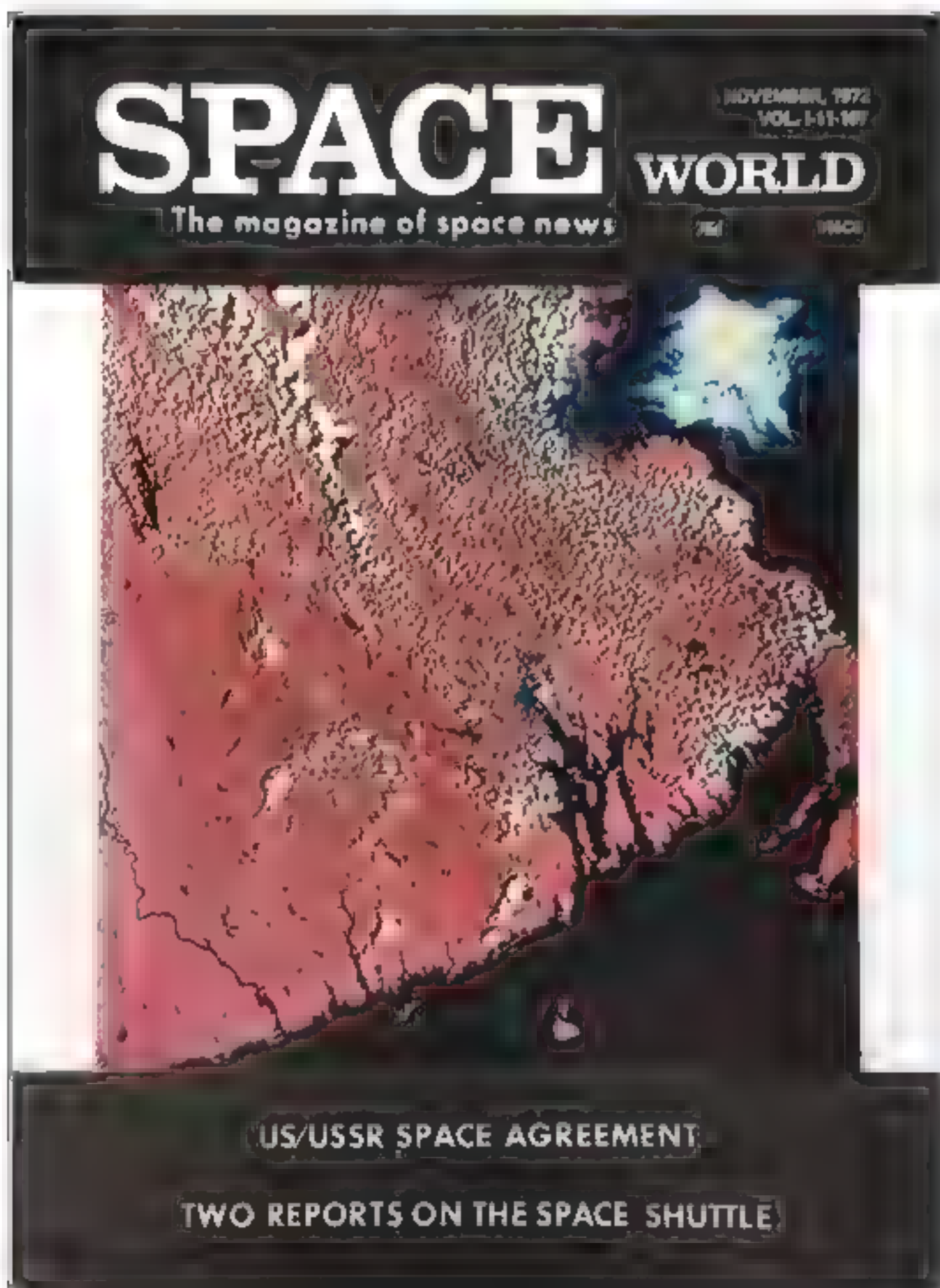
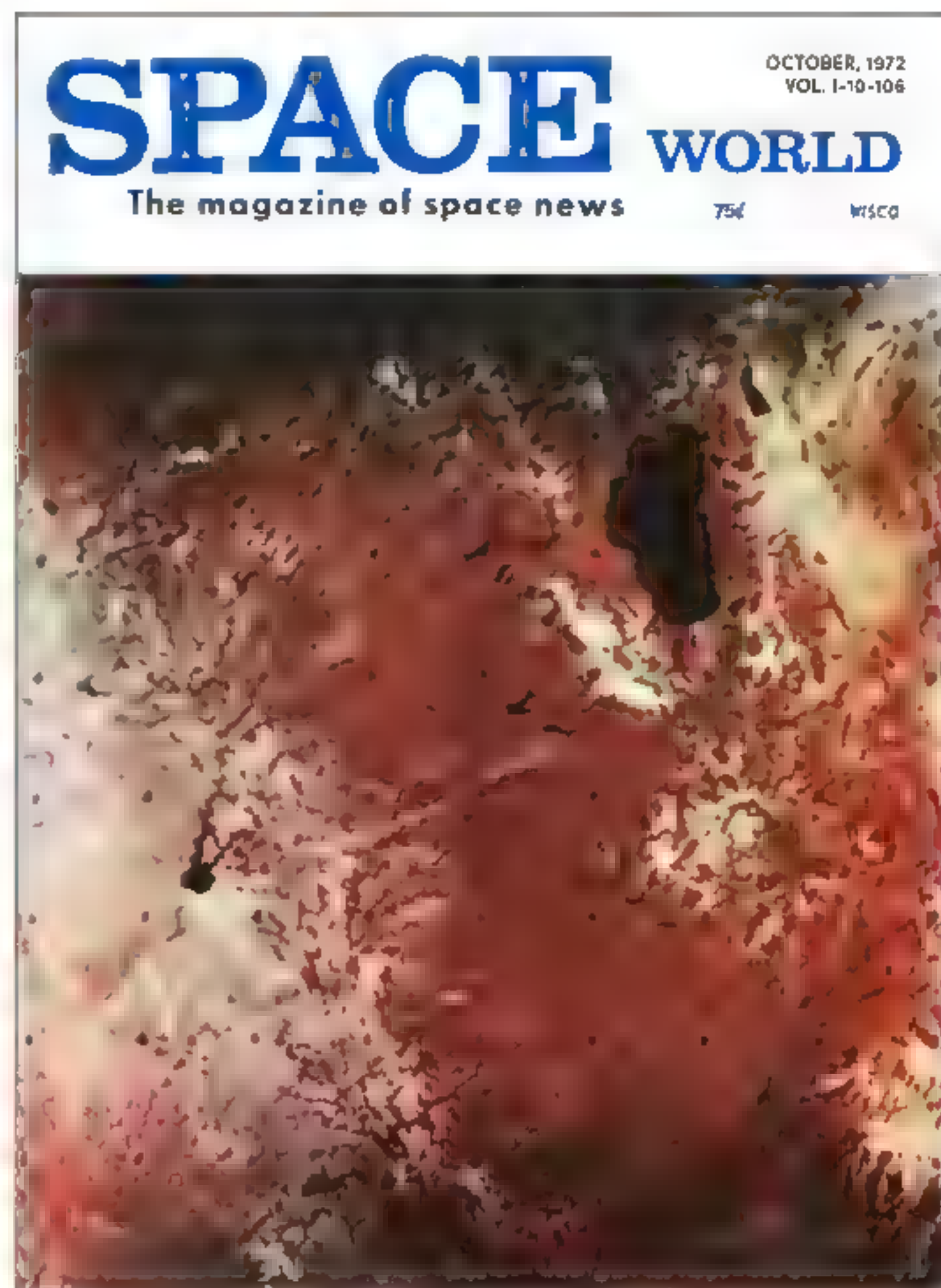
The magazine of space news

75¢

WISCO



WATER ON DISTANT PLANETS ELECTRIC POWER GENERATION IN SPACE



SPACE WORLD

1973

SPACE WORLD

The magazine of space news

JANUARY 1973
VOL. J-1-108

75¢

WISCO

THE
TOTAL
STORY
OF
GEMINI



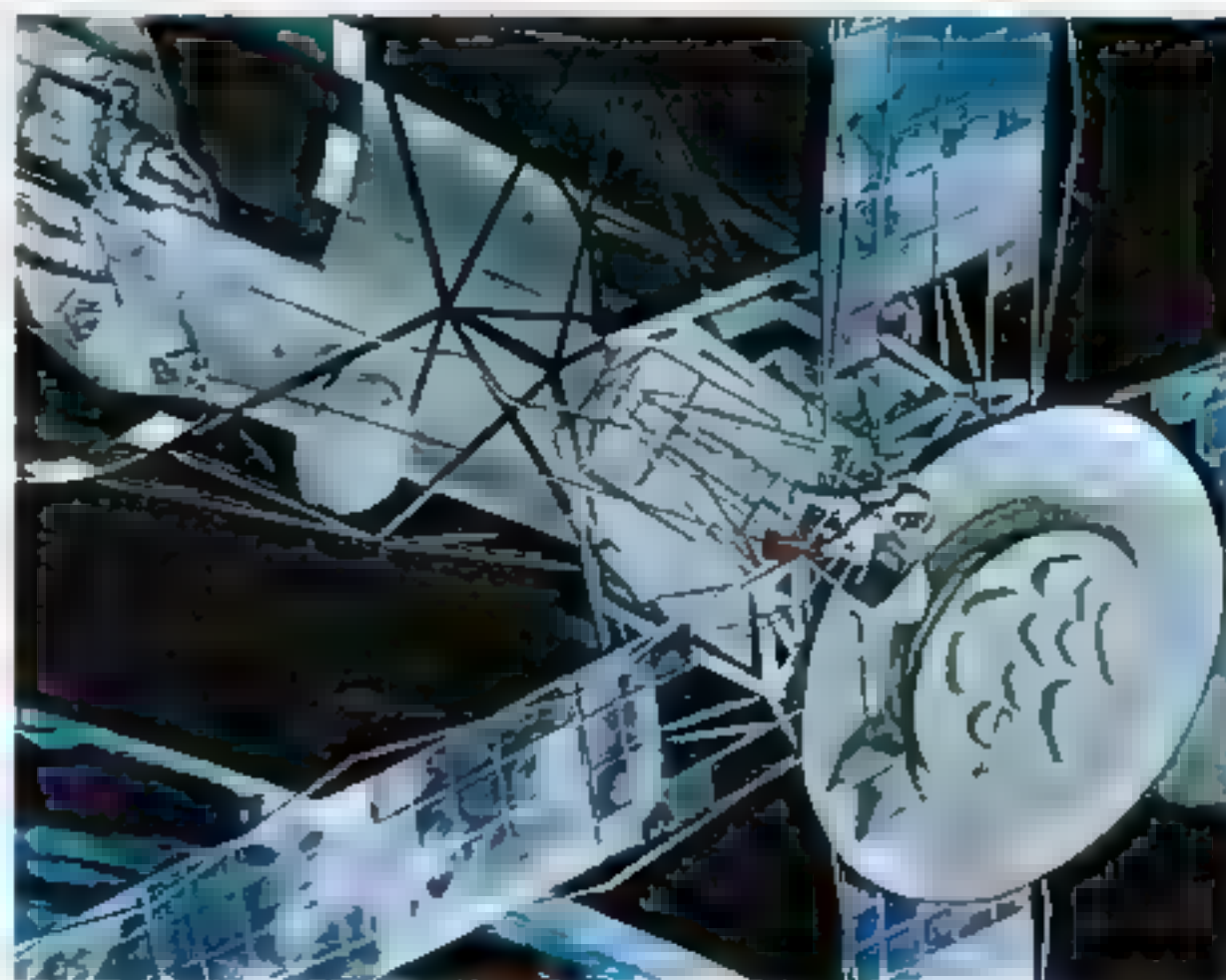
SPACE WORLD

The magazine of space news

FEBRUARY 1973
VOL. J-2-110

75¢

WISCO



THE TOTAL STORY
OF GEMINI

SPACE WORLD

The magazine of space news

MARCH 1973
VOL. J-3-111

75¢

WISCO



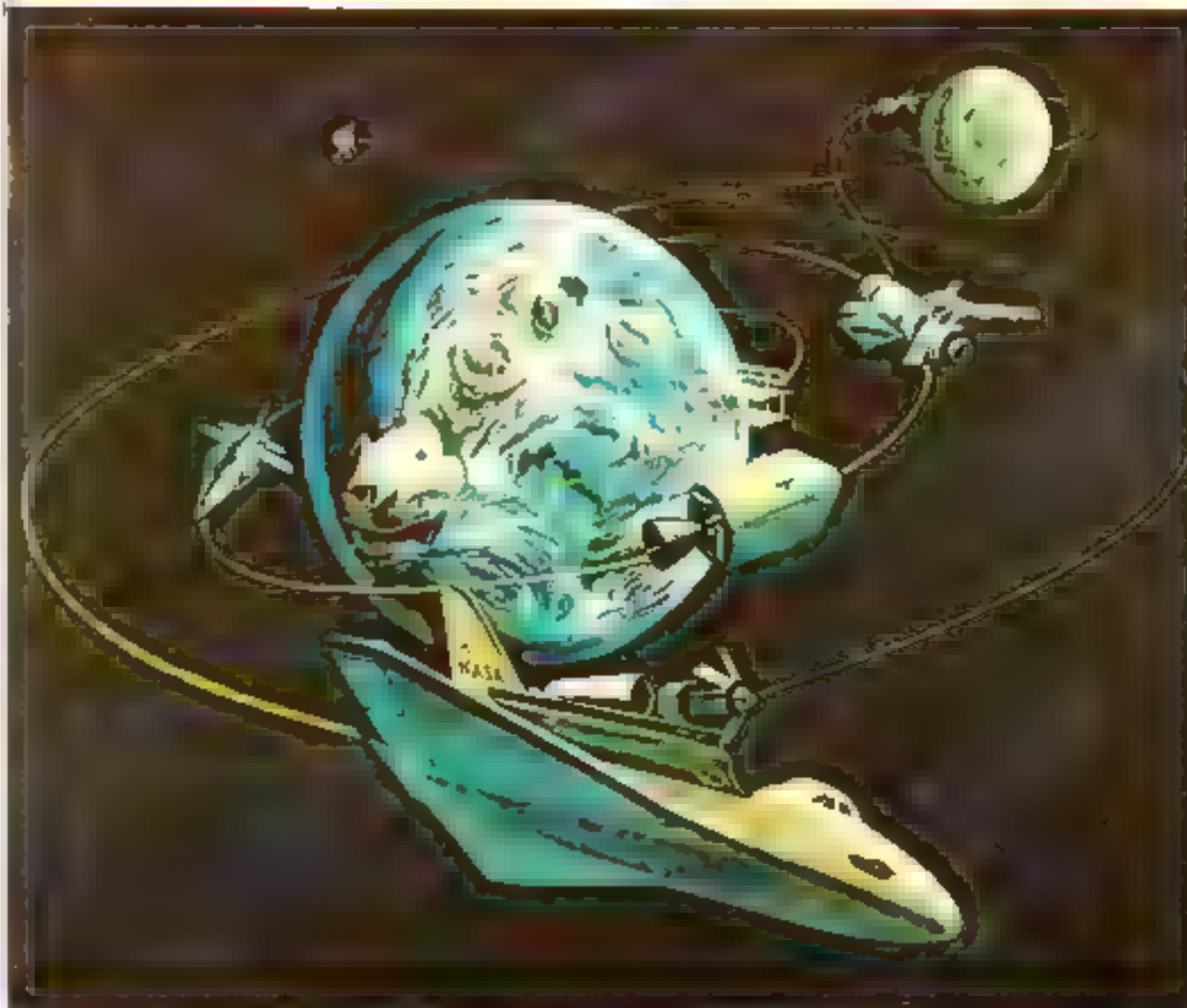
SPACE WORLD

The magazine of space news

APRIL 1973
VOL. J-3-112

75¢

WISCO



The Development of Transportation Systems

SOME SCIENTIFIC FACTS ABOUT APOLLO 17 AND
TAURUS-LITTROW

SPACE WORLD

The magazine of space news

MAY 1973
VOL. 14-113

75¢

WISC



SOME SCIENTIFIC FACTS ABOUT APOLLO 17 AND
TAURUS-LITTROW

SPACE WORLD

The magazine of space news

WORLD



SPACE WORLD

The magazine of space news

AUGUST 1973
VOL. 14-118

75¢

WISC



SPACE WORLD

The magazine of space news

AUGUST 1973
VOL. 14-118

75¢

WISC

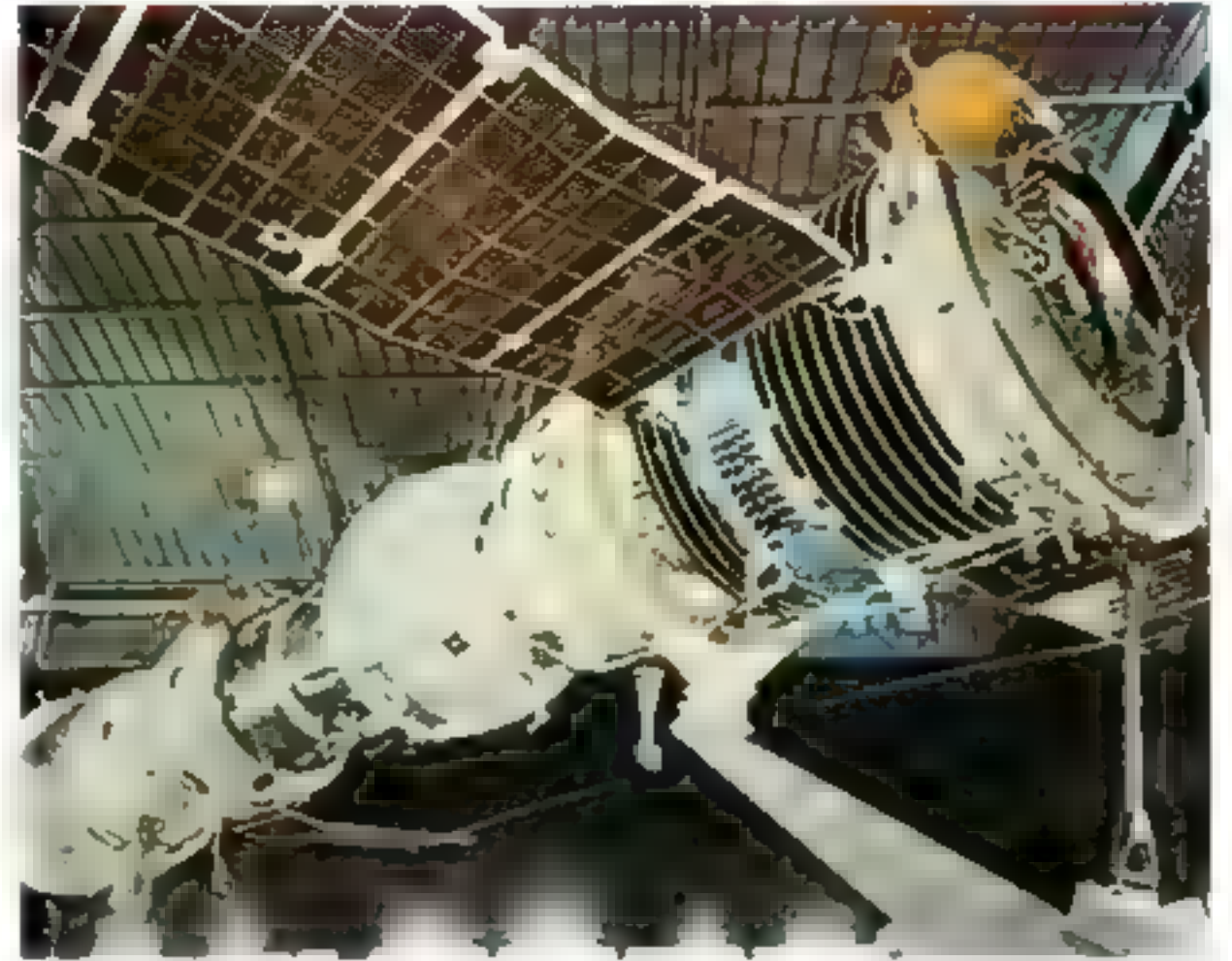




SPACE WORLD

OCTOBER, 1973
VOL. J-10-118

The magazine of space news 76¢ WISCO



WEATHER FORECASTING FROM SPACE
CANADA'S ANIK 2 SATELLITE
JOINT SPACE FLIGHT
HOW TO DIG A WELL—ROCKET STYLE



SPACE WORLD

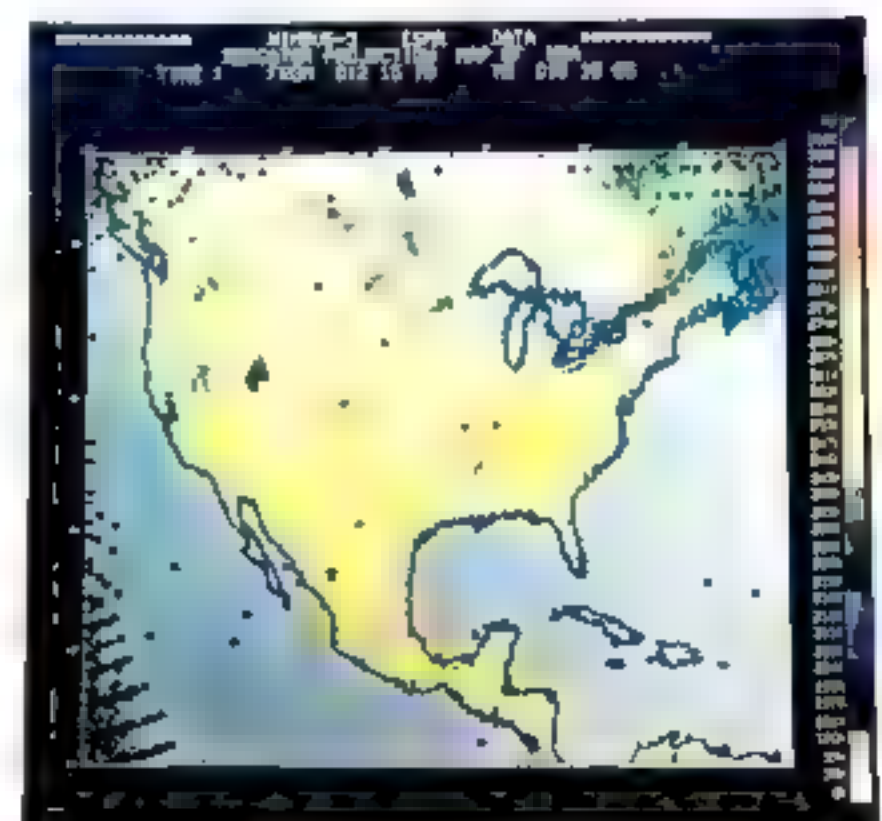
DECEMBER, 1973
VOL. J-11 120

The magazine of space news 76¢ WISCO

RADIO BRIGHTNESS OF THE WIND
A 100% LINEARLY SCANNED MICROWAVE RADIOMETER
A 100% LINEAR



12-16 January 1973



SPACE WORLD

1974

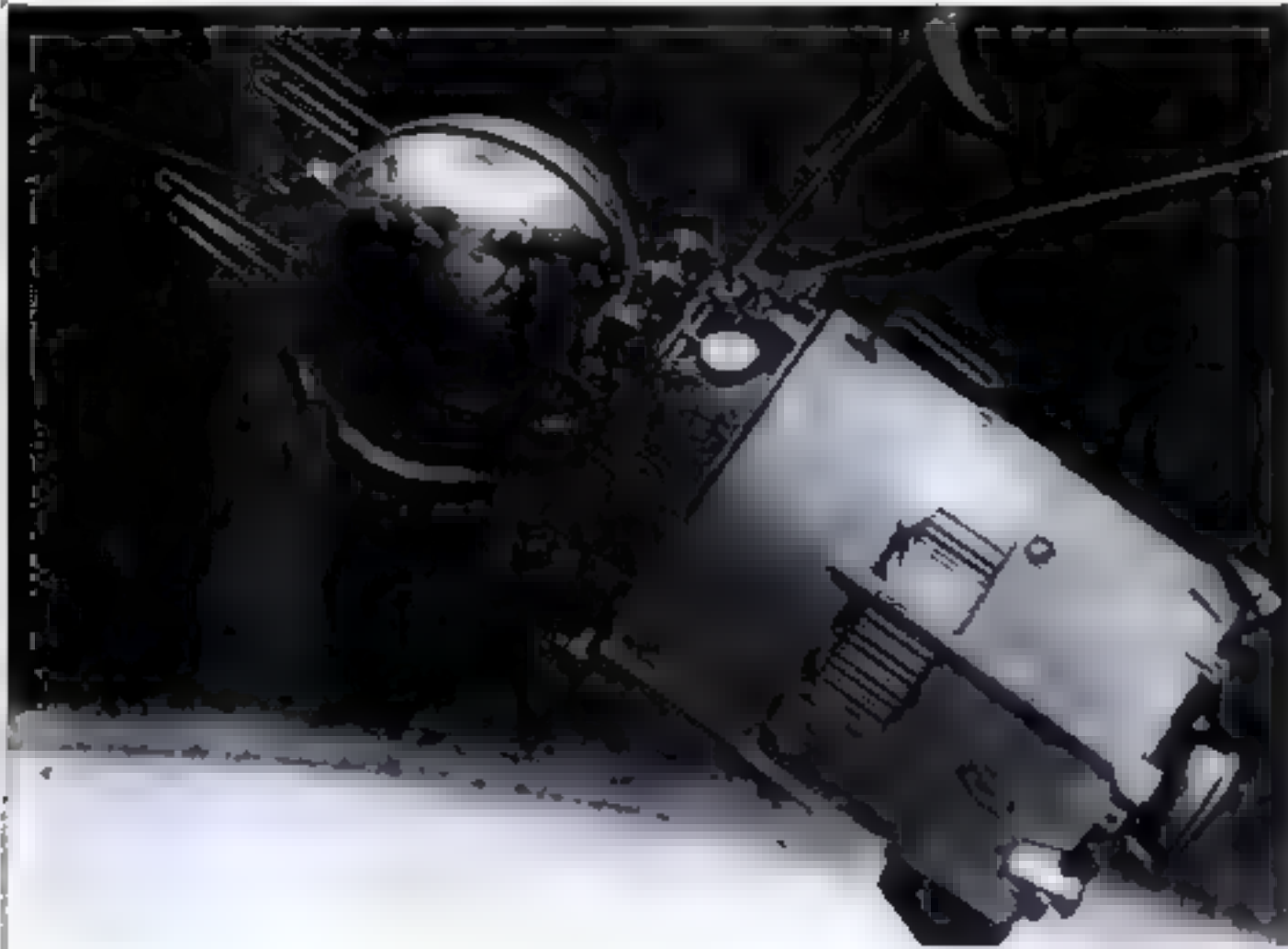


SPACE WORLD

The magazine of space news

MAY 1974
VOL. K-5-125

75¢ WISCO



KOROLEV

THE LIMITLESS HORIZONS OF SPACE

SPACE EXPLORATION'S GREATEST TOOL—THE COMPUTER

SPACE WORLD

The magazine of space news

JUNE 1974
VOL. K-6-126

75¢ WISCO



DISCOVERING THE MYSTERIES OF THE UNIVERSE

VLADIMIR KOMAROV, FIRST SPACE CASUALTY

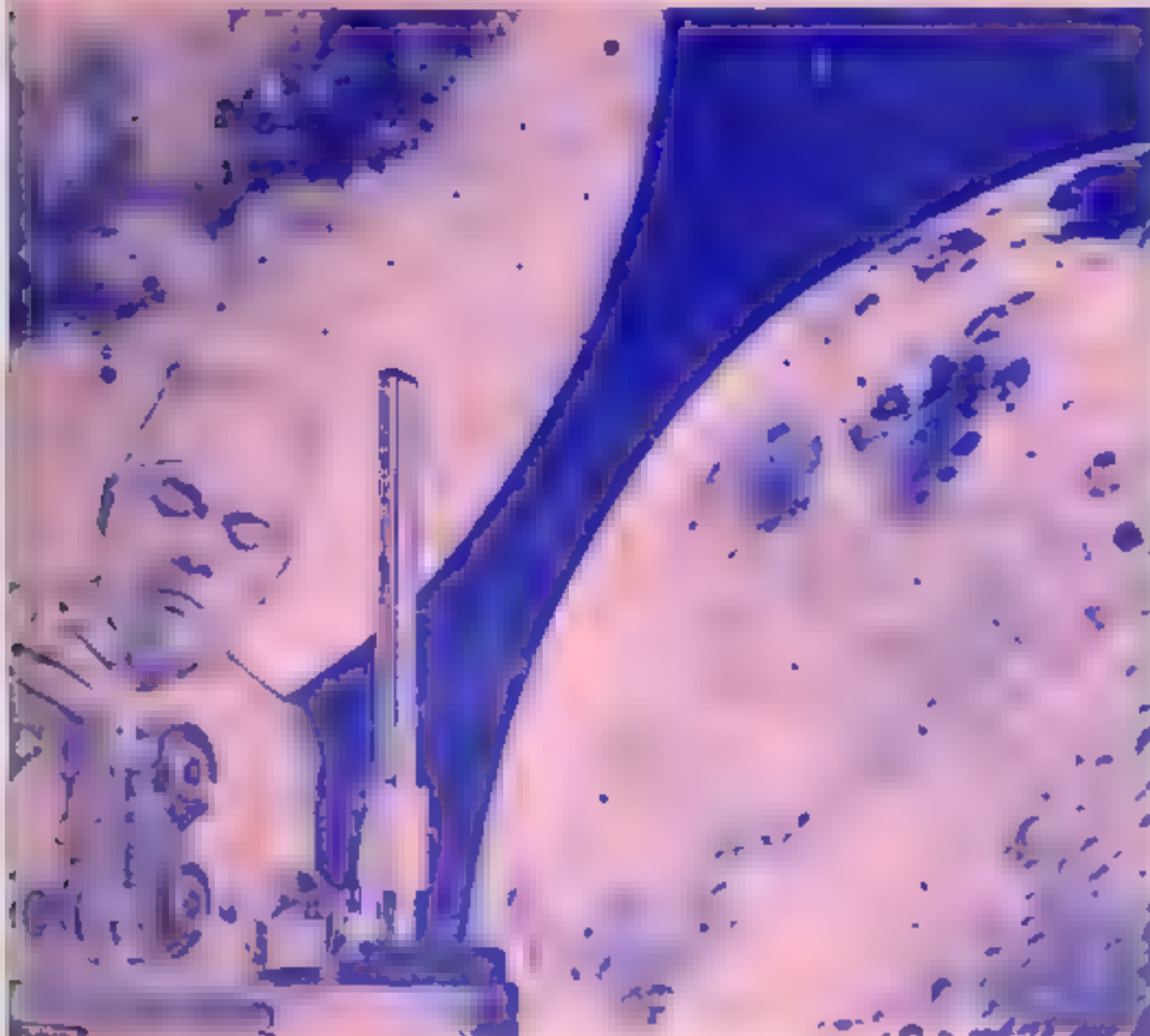
CONTRIBUTION OF SPACE MEDICINE

SPACE WORLD

The magazine of space news

JULY 1974
VOL. K-7-127

75¢ WISCO



NASA'S TECHNOLOGY UTILIZATION PROGRAM

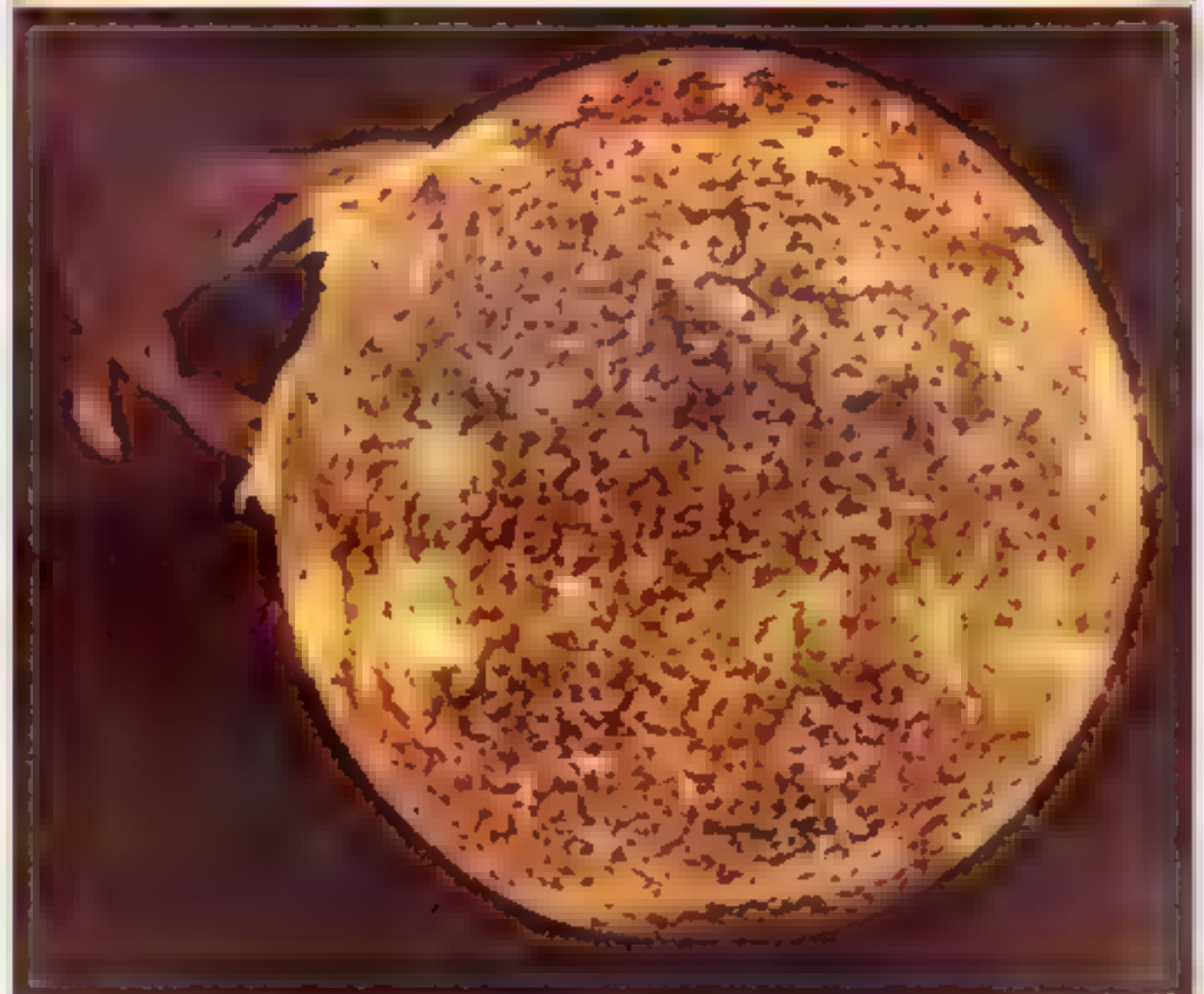
SOYUZ APOLLO: PROJECT OF A PEACEFUL PLANET

SPACE WORLD

The magazine of space news

AUGUST 1974
VOL. K-8-128

75¢ WISCO



NEWEST APPLICATIONS TECHNOLOGY SATELLITE

THE ATLANTIC TROPICAL EXPERIMENT

COPERNICUS EXPLORES SPACE

SPACE WORLD

The magazine of space news

SEPTEMBER 1974
VOL. K 9-129

75¢ WISCO



**Analysis of Surveyor 3
material and photographs
returned by Apollo 12**

SPACE WORLD

The magazine of space news

OCTOBER 1974
VOL. K 10-130

HEADLINE
To be launched in 1977

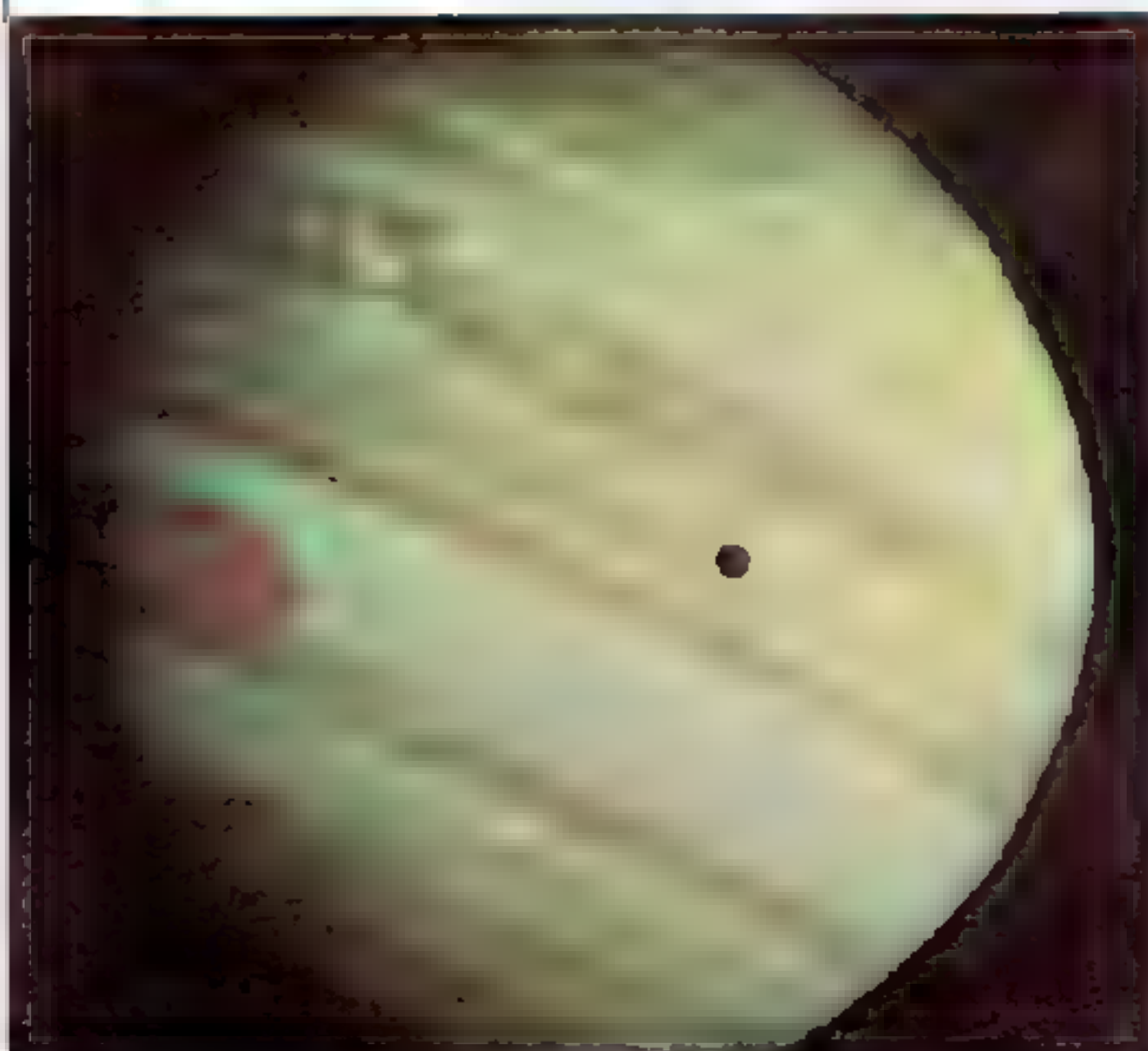
SHATALOV - Space Professional

SPACE

The magazine of space news

NOVEMBER 1974
VOL. K 11-131

75¢ WISCO



Jupiter as seen by Pioneer 10 on December 1, 1973

SPACE WORLD

The magazine of space news

DECEMBER 1974
VOL. K 12-132

75¢ WISCO



Our Knowledge of the Solar System

VENUS HOLDS CLUES TO EARTH'S WEATHER

SPACE WORLD

1975

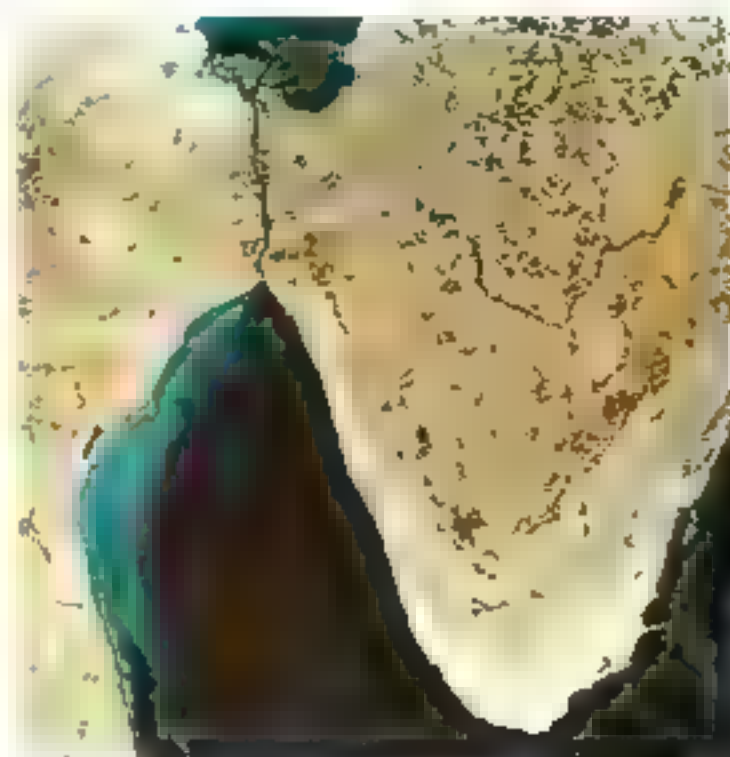
SPACE WORLD

The magazine of space news

75¢

WISCO

JANUARY, 1975
VOL. L-1 133



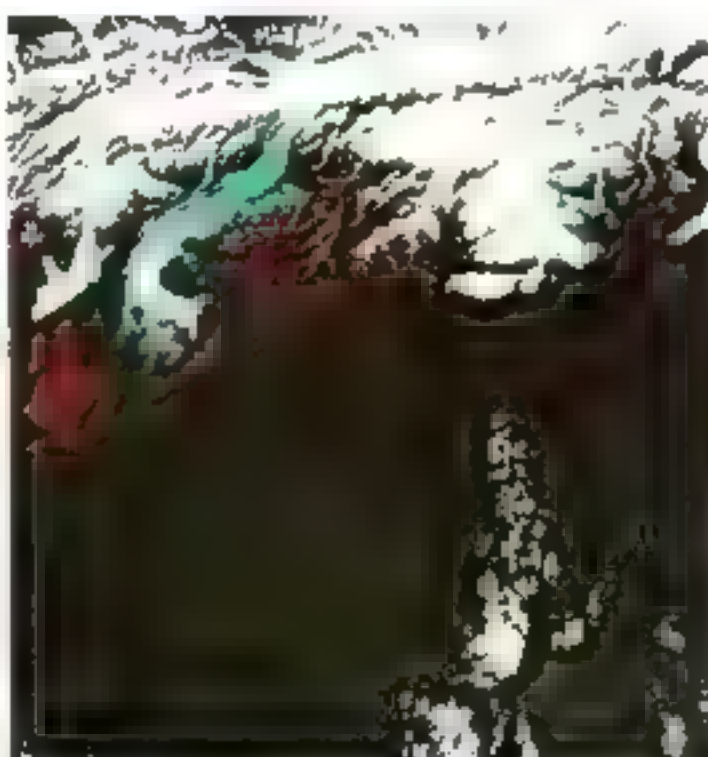
LAKES HURON AND ST. CLAIR

This picture of Lakes Huron and St. Clair on the Michigan-Canadian border obtained by the Earth Resources Technology Satellite-1 on April 14, 1973, is an example of turbidity variations which can be easily spotted in detail from ERTS. The variations are caused by suspended sediments, organic pollutants or algae material that cause relative variations in color or reflectance of the water. In addition, the eddies and currents seen in the imagery give clues as to where shoreline erosion is occurring. Lake Huron is the large body of water at the top and Lake St. Clair, connected to Lake Huron by the St. Clair River, is at the bottom. Canada is to the right of the river and Michigan to the left.

Continued on page 8.

This Earth Resources Technology Satellite-1 (ERTS-1) picture of the Bering Glacier in Central Alaska obtained September 22, 1972, shows how glaciers (nearly 80% of the world's fresh water is contained in glaciers and icecaps) can be monitored from spacecraft. The Bering Glacier is the largest on the North American continent and is about 200 kilometers (124 miles) long. Note the wiggly or folded margins: areas of trapped dirt and debris which characterizes it as a surging glacier. Surging glaciers occasionally block and suddenly release large amounts of melt water resulting in floods. Sediment plumes extend out some tens of miles into the Gulf of Alaska and some, largely, from glacial melt. These melt areas are delineated by the dark areas on the glacier, which result from the lower reflectivity of surface water standing or flowing on the surface.

BERING GLACIER



SPACE WORLD

The magazine of space news

75¢

WISCO

FEBRUARY, 1975
VOL. L-2 134

★★★★

WESTAR
America's First
Domestic
Communications
Satellite

★★★★

GOLDSTONE

★★★★

WEATHER
FROM
SPACE EVERY
30 MINUTES

★★★★

THE BERING
GLACIER

★★★★



SPACE WORLD

The magazine of space news



SPACE WORLD

The magazine of space news

75¢

WISCO

APRIL, 1975
VOL. L-4 135



SPACE WORLD

The magazine of space news

MAY 1975
VOL. 1-5-137

75¢

WISCO



SPACE WORLD

The magazine of space news

JUNE 1975
VOL. 1-6-138

75¢

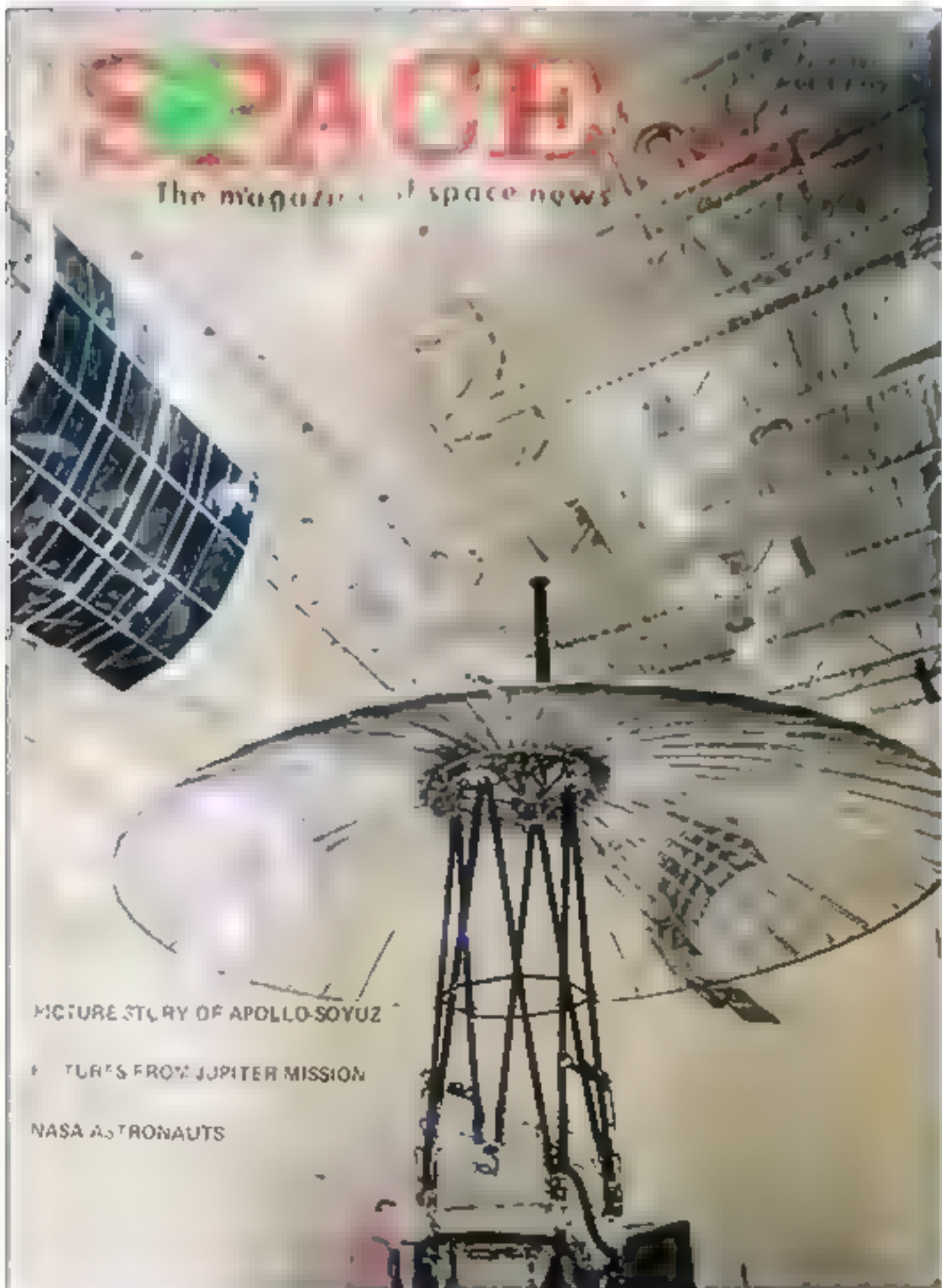
WISCO



**Soyuz
II**

SPACE

The magazine of space news



PICTURE STORY OF APOLLO-SOYUZ

PICTURES FROM JUPITER MISSION

NASA ASTRONAUTS

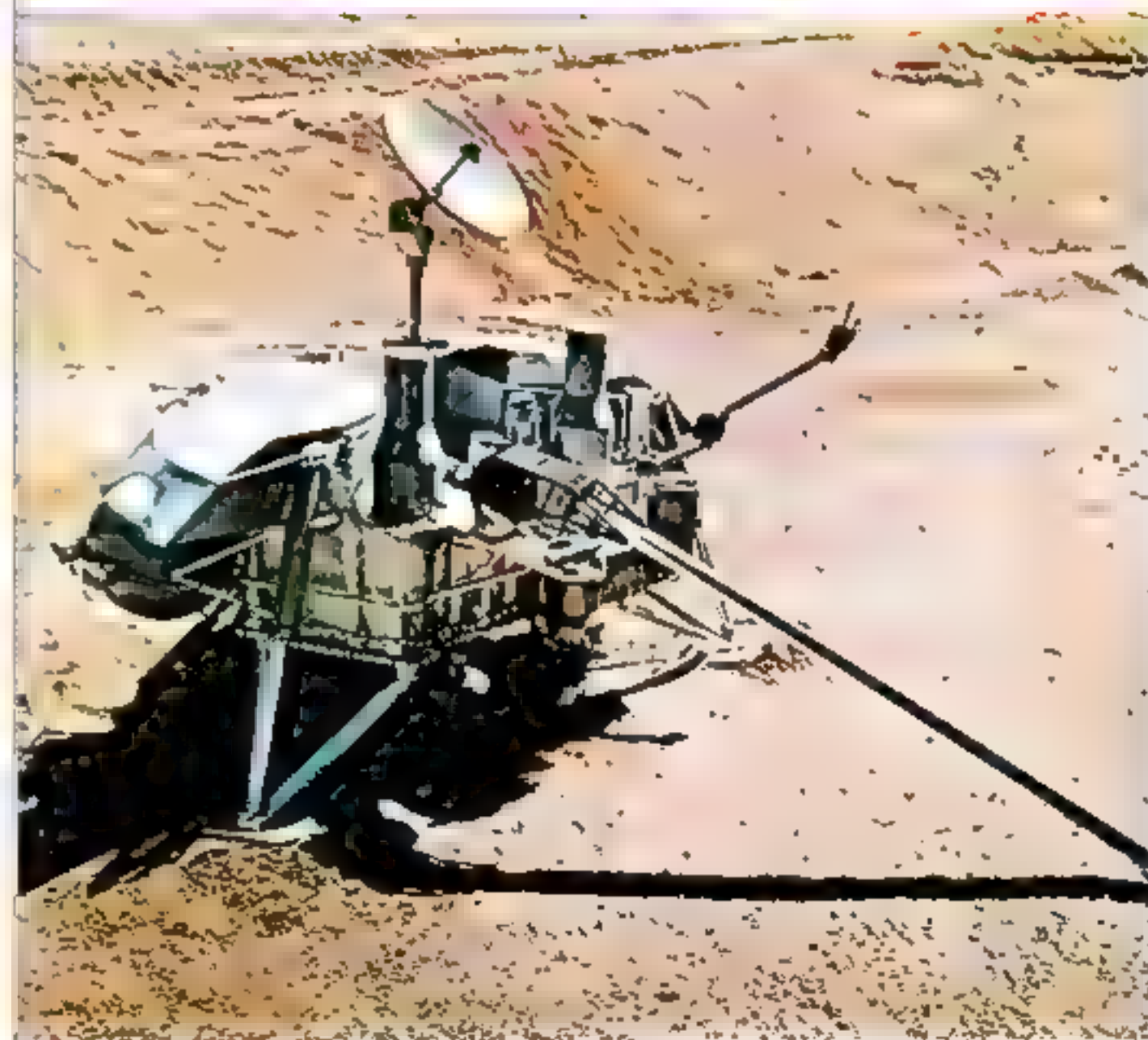
SPACE WORLD

The magazine of space news

AUGUST 1975
VOL. 1-8-140

75¢

WISCO



VIKING PROGRAM

FUTURE NASA PROGRAMS

SPACE WORLD

The magazine of space news

SEPTEMBER, 1975
VOL. 1:9-141

75¢ WISCO

SMS-2
SPACE SHUTTLE LANDING SYSTEM
EFFECTS OF LONG TERM SPACE FLIGHT
EXPLORER 2 X-RAY ASTRONOMY SATELLITE

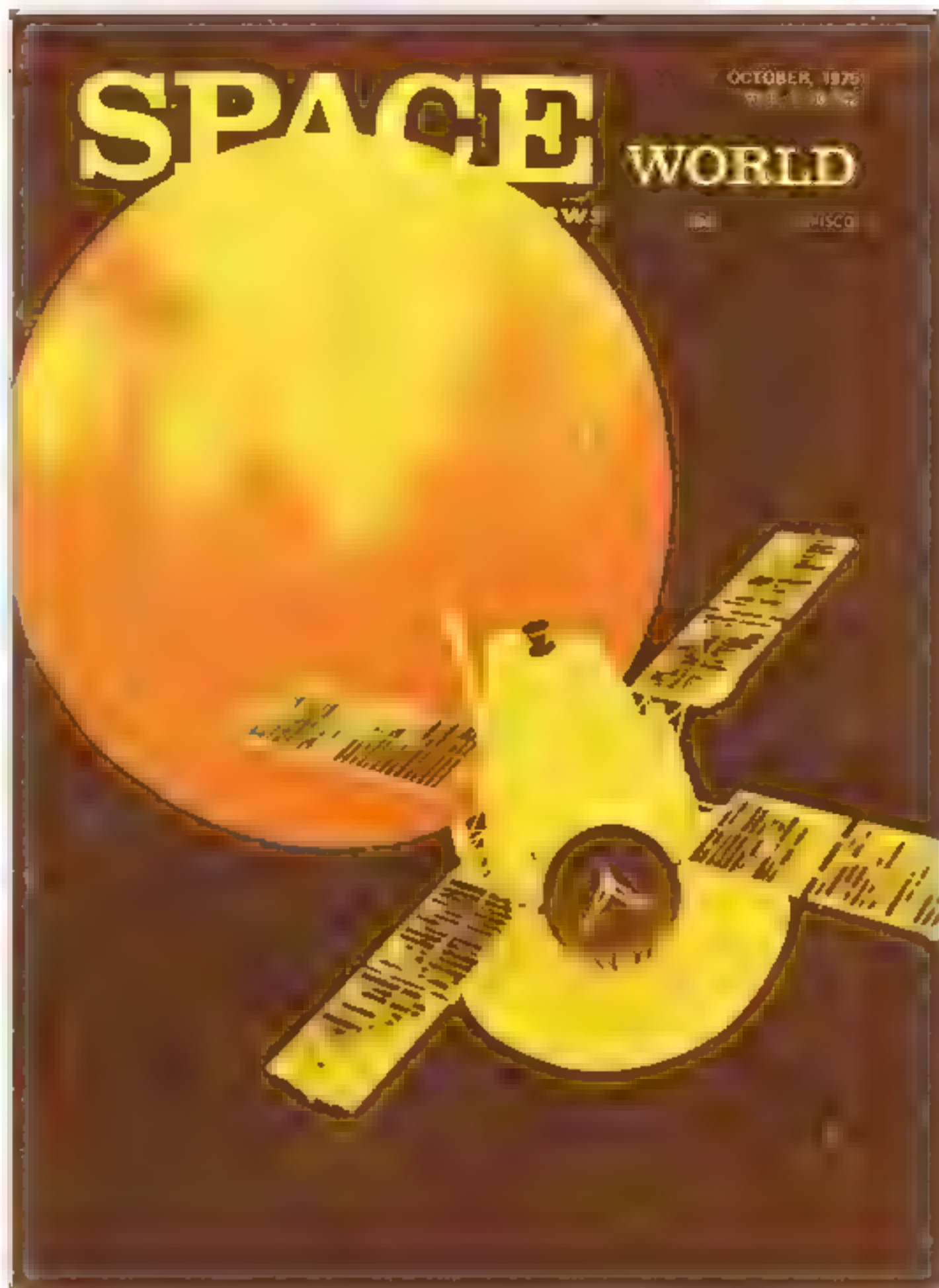


SPACE WORLD

The magazine of space news

OCTOBER, 1975
VOL. 1:142-192

75¢ WISCO



SPACE WORLD

The magazine of space news

NOVEMBER, 1975
VOL. 1:11-143

75¢ WISCO



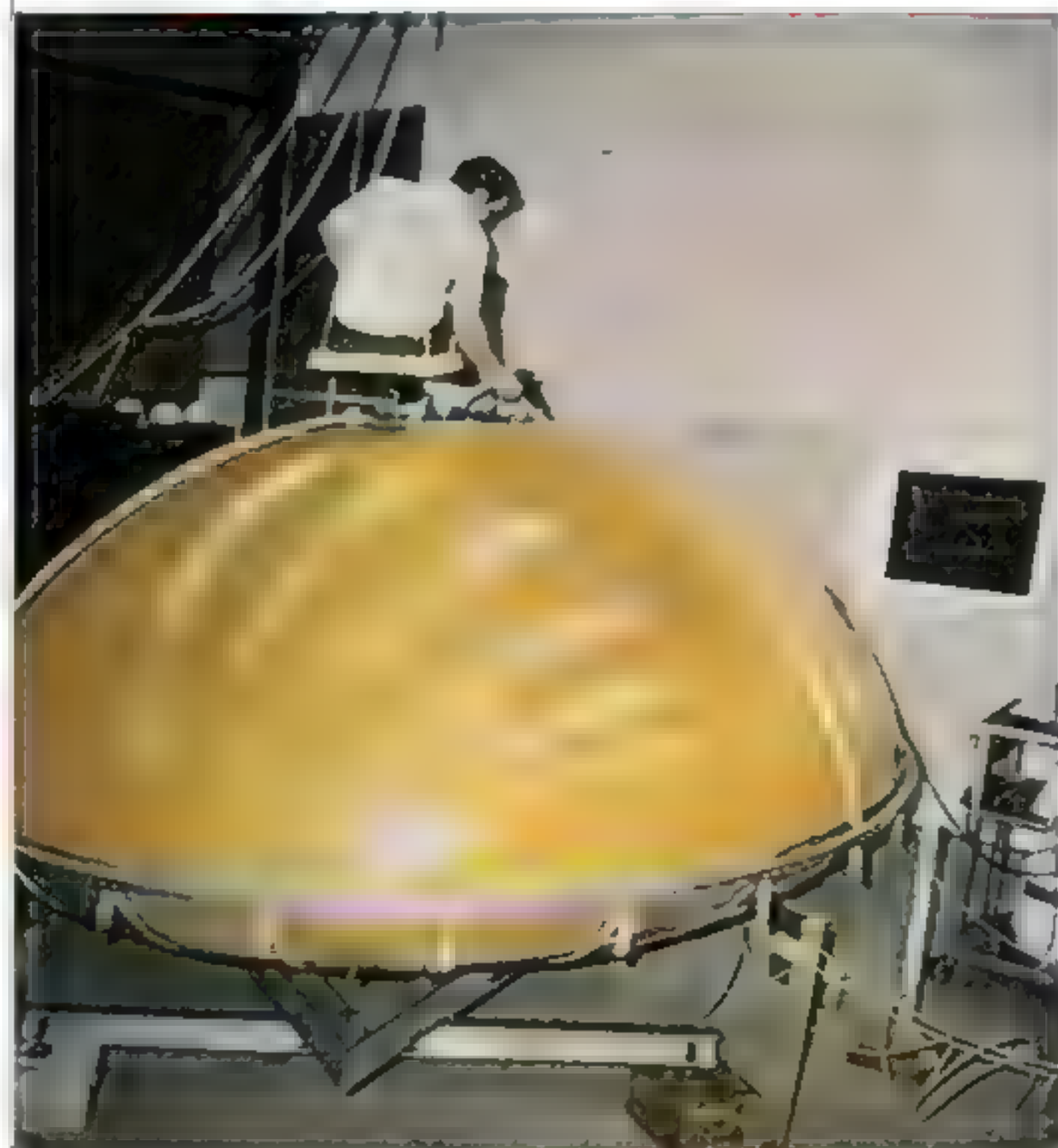
THE SOVIET STORY OF SOYUZ-APOLLO

SPACE WORLD

The magazine of space news

DECEMBER, 1975
VOL. 1:144-194

75¢ WISCO



SPACE WORLD

1976

SPACE WORLD

JANUARY 1976
VOL. 1145

The magazine of space news

75c



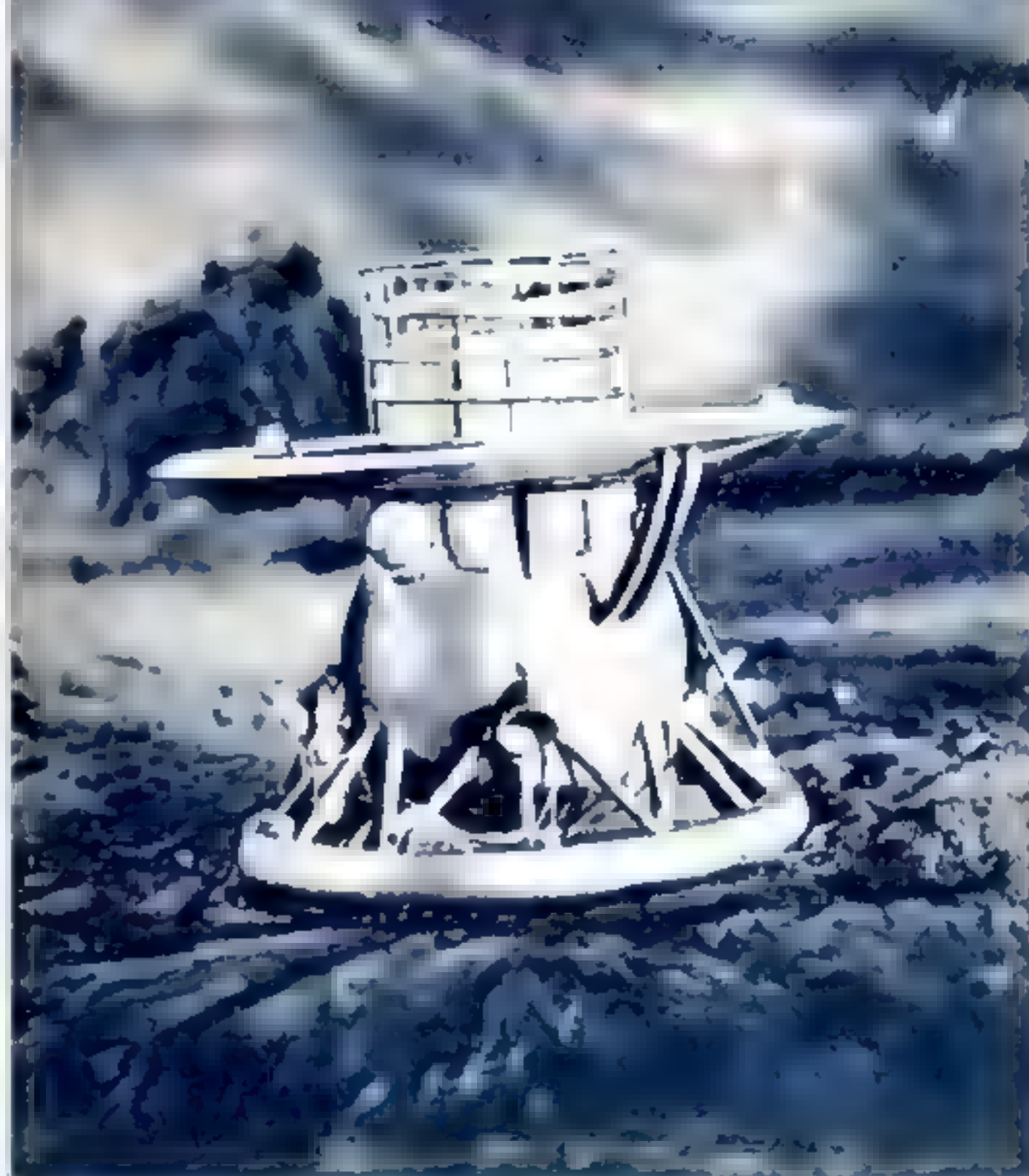
SPACE WORLD

FEBRUARY 1976
VOL. 1146

The magazine of space news

75c

WISCO

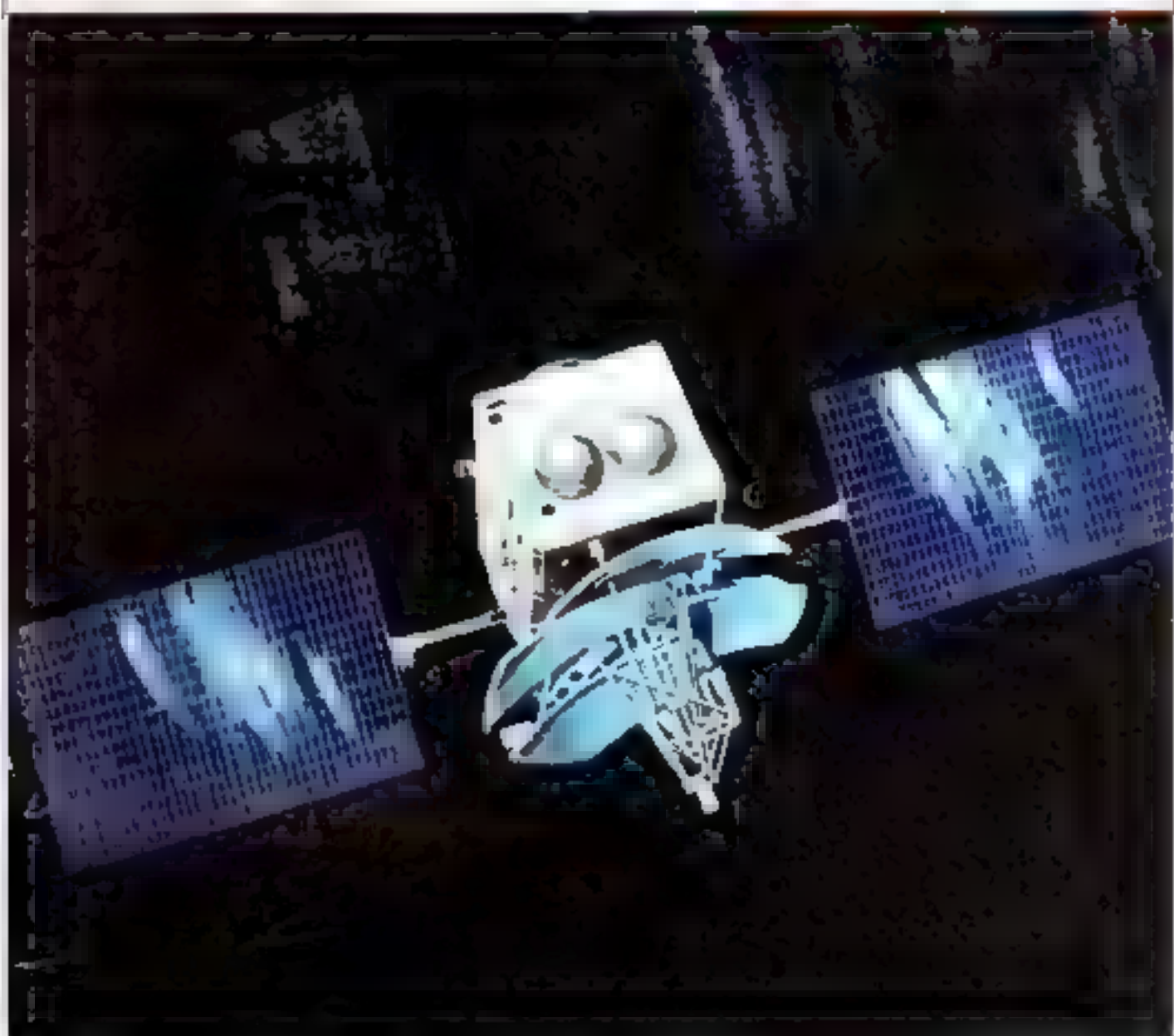


SPACE WORLD

MARCH 1976
VOL. 1147

The magazine of space news

75c WISCO



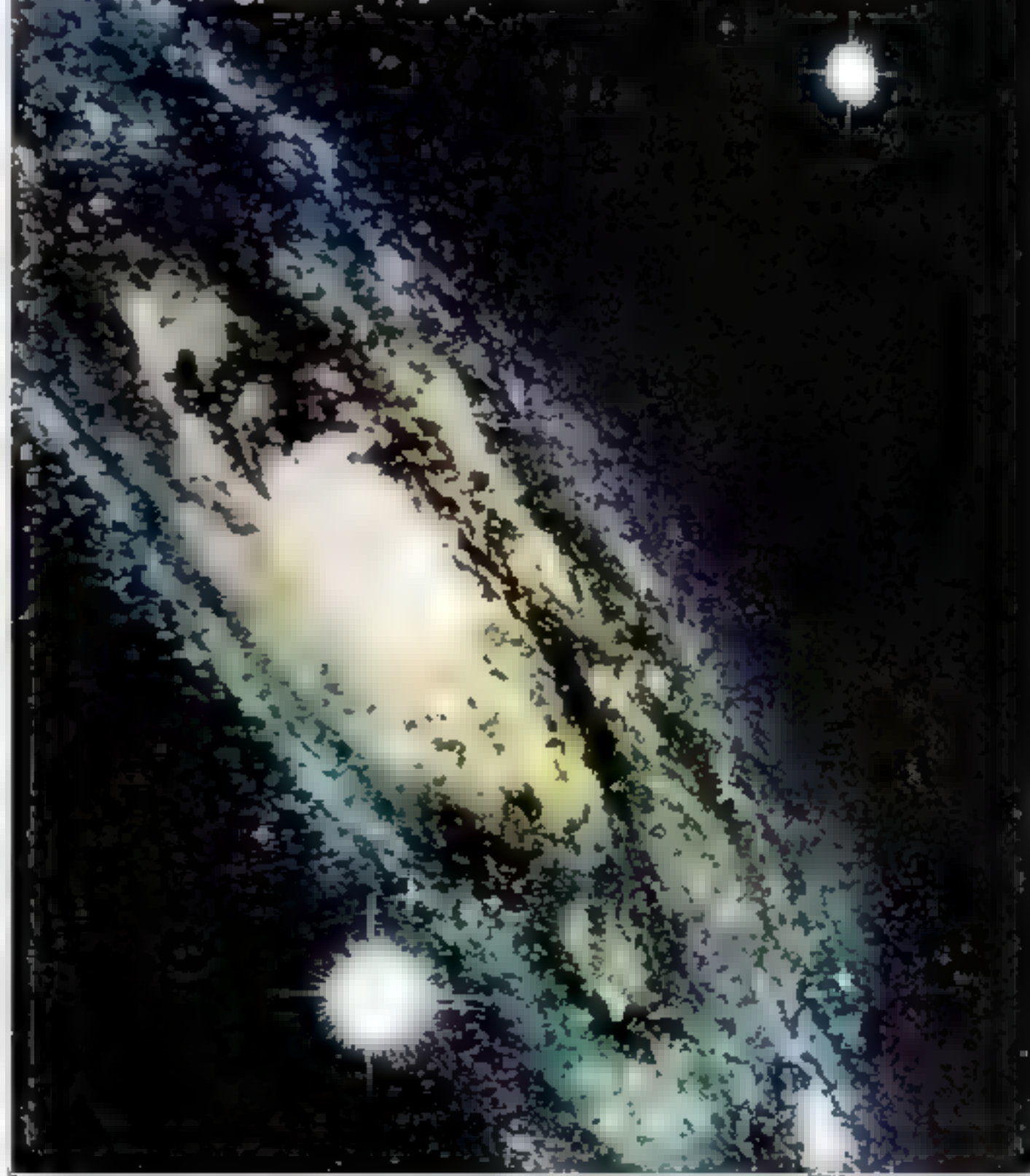
RCA's ROLE IN SPACE PROGRAMS

SPACE WORLD

APRIL 1976
VOL. 1148

The magazine of space news

75c WISCO



SPACE WORLD

The magazine of space news

MAY 1976
Vol. M-5-149

75c WISCO



REMOTE SENSING--Environmental & Geotechnical Applications
ISOTOPE FUELED SPACE POWER SYSTEM
NAVYAL RESEARCH LABORATORY'S SOLRAD III IS UP

SPACE WORLD

The magazine of space news

JUNE 1976
Vol. M-6-150

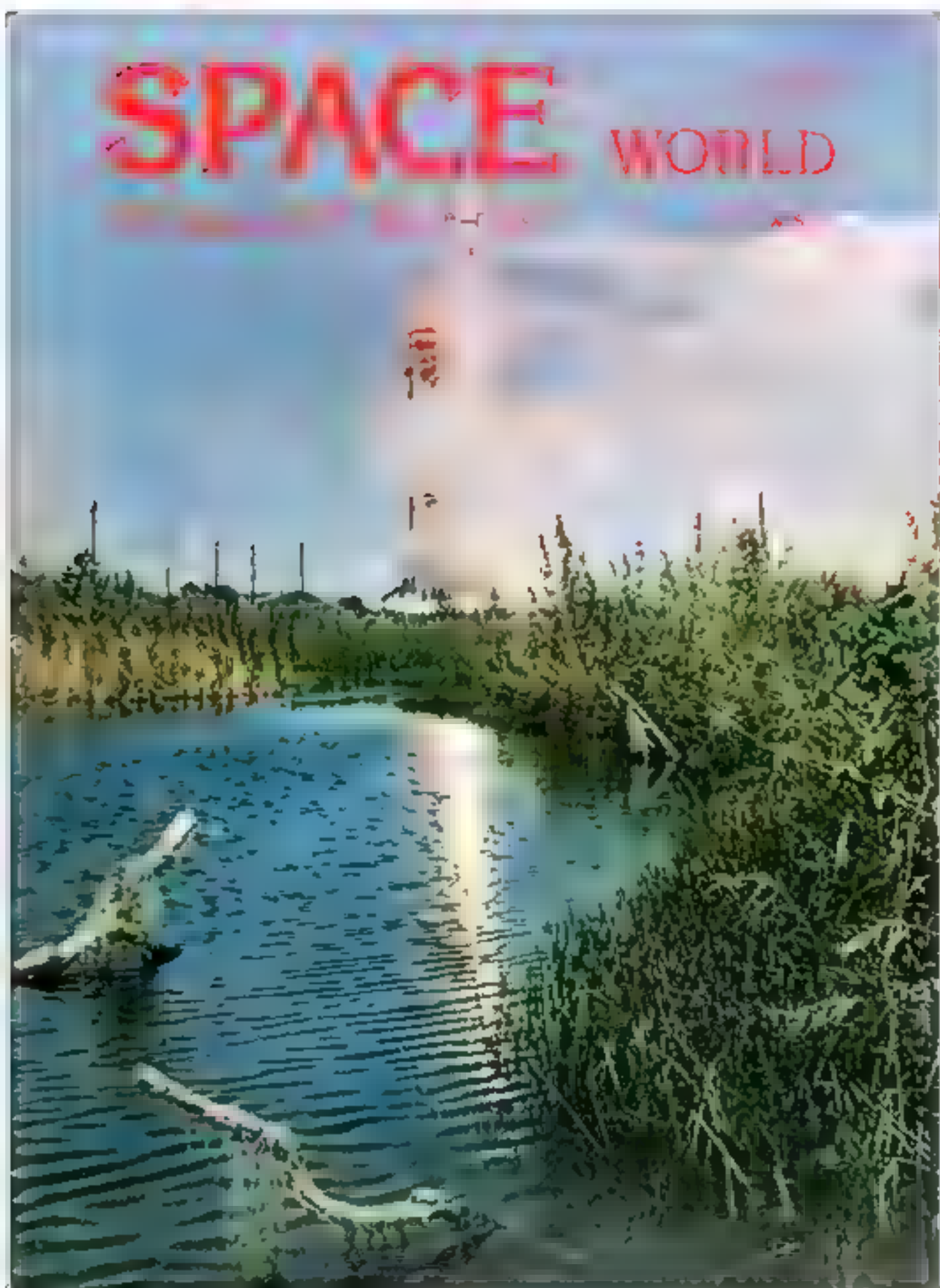
75c WISCO



NASA'S MARS LANDER

WILL IT ANSWER THE QUESTION: "IS THERE LIFE ON MARS?"
THE NEW MOON: A WINDOW ON THE UNIVERSE
SPACE EXPLORATION: THE RESEARCH PAY OFF

SPACE WORLD

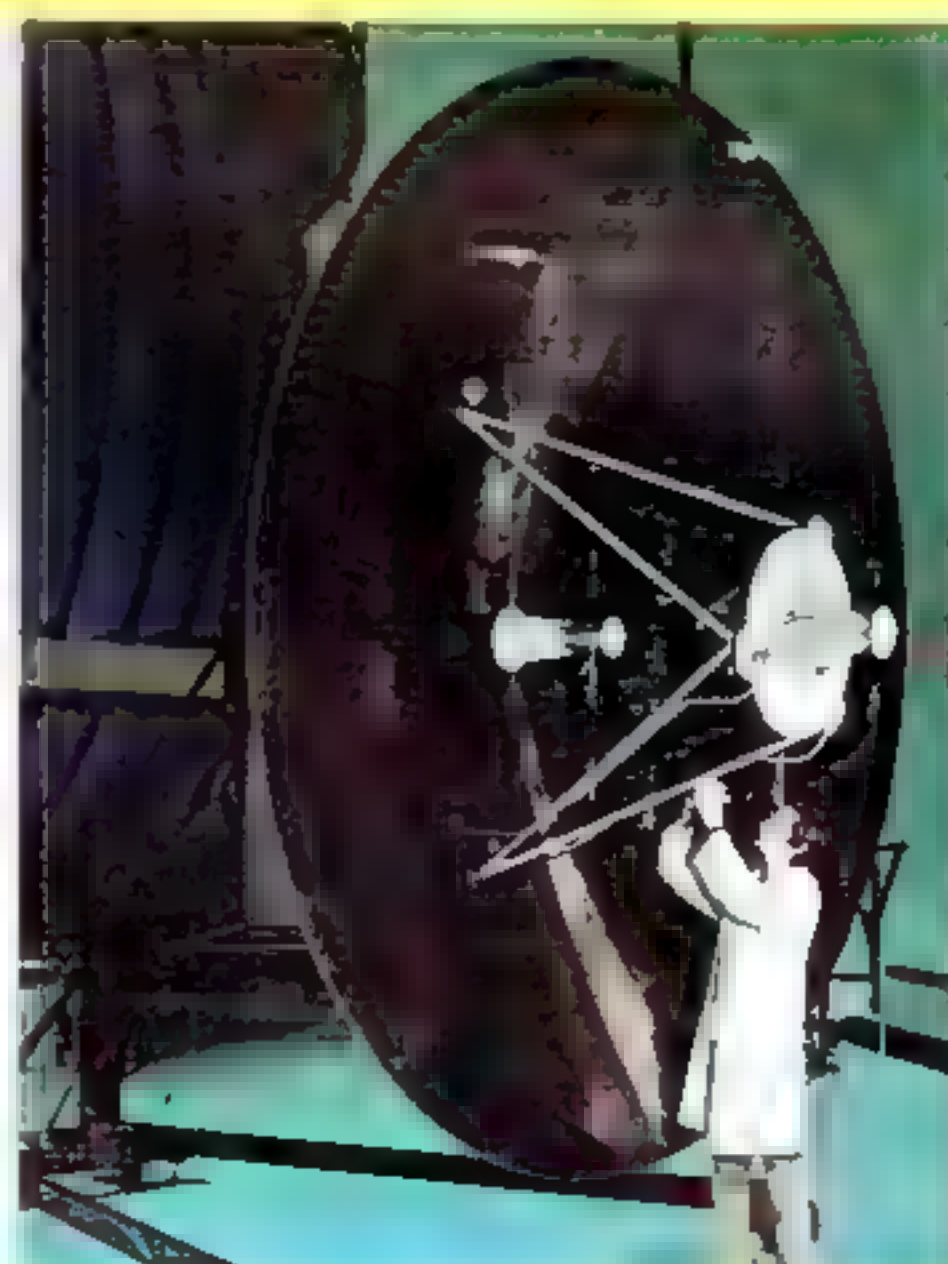


SPACE WORLD

AUGUST 1976
VOL. M-8-152

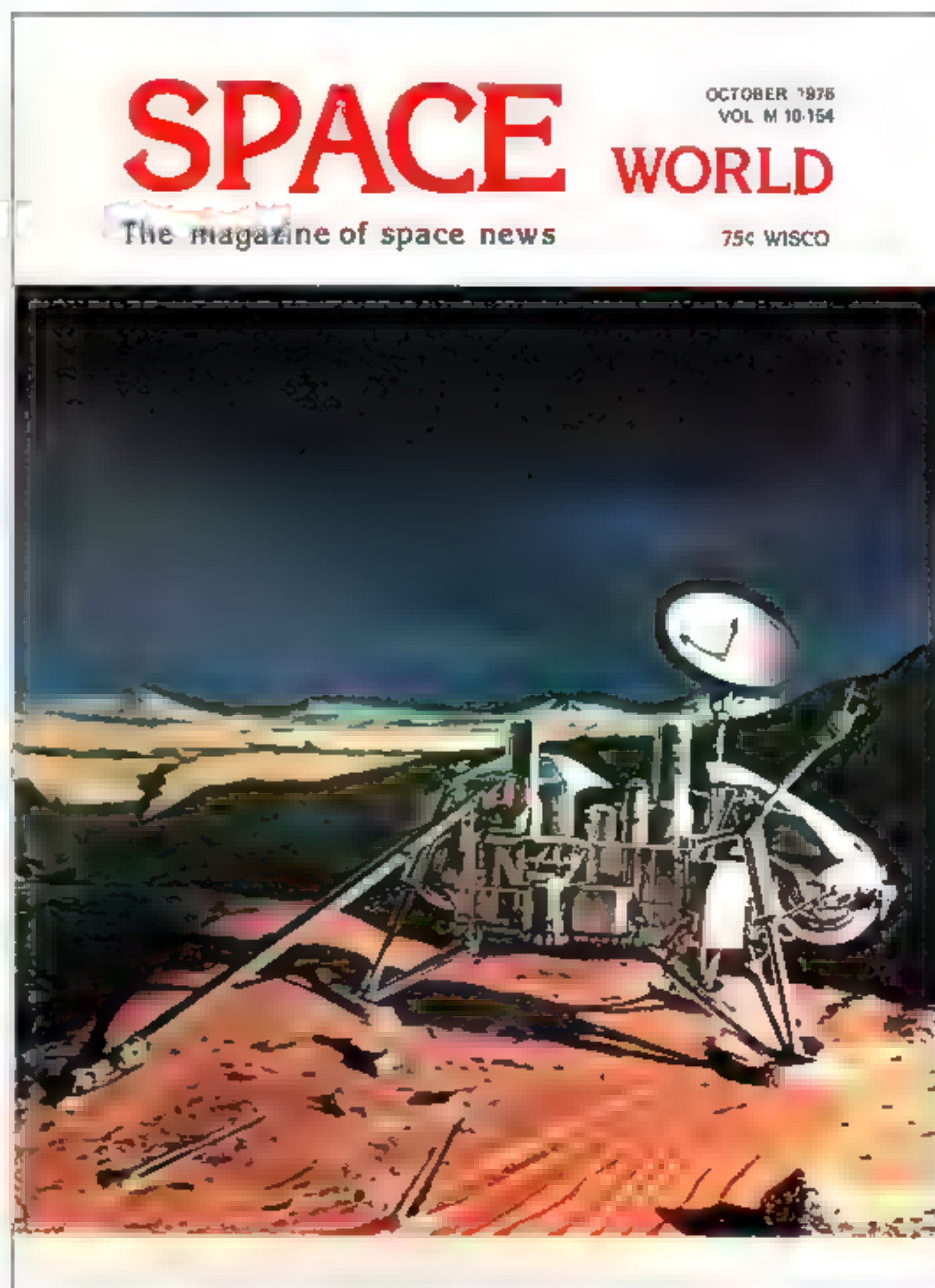
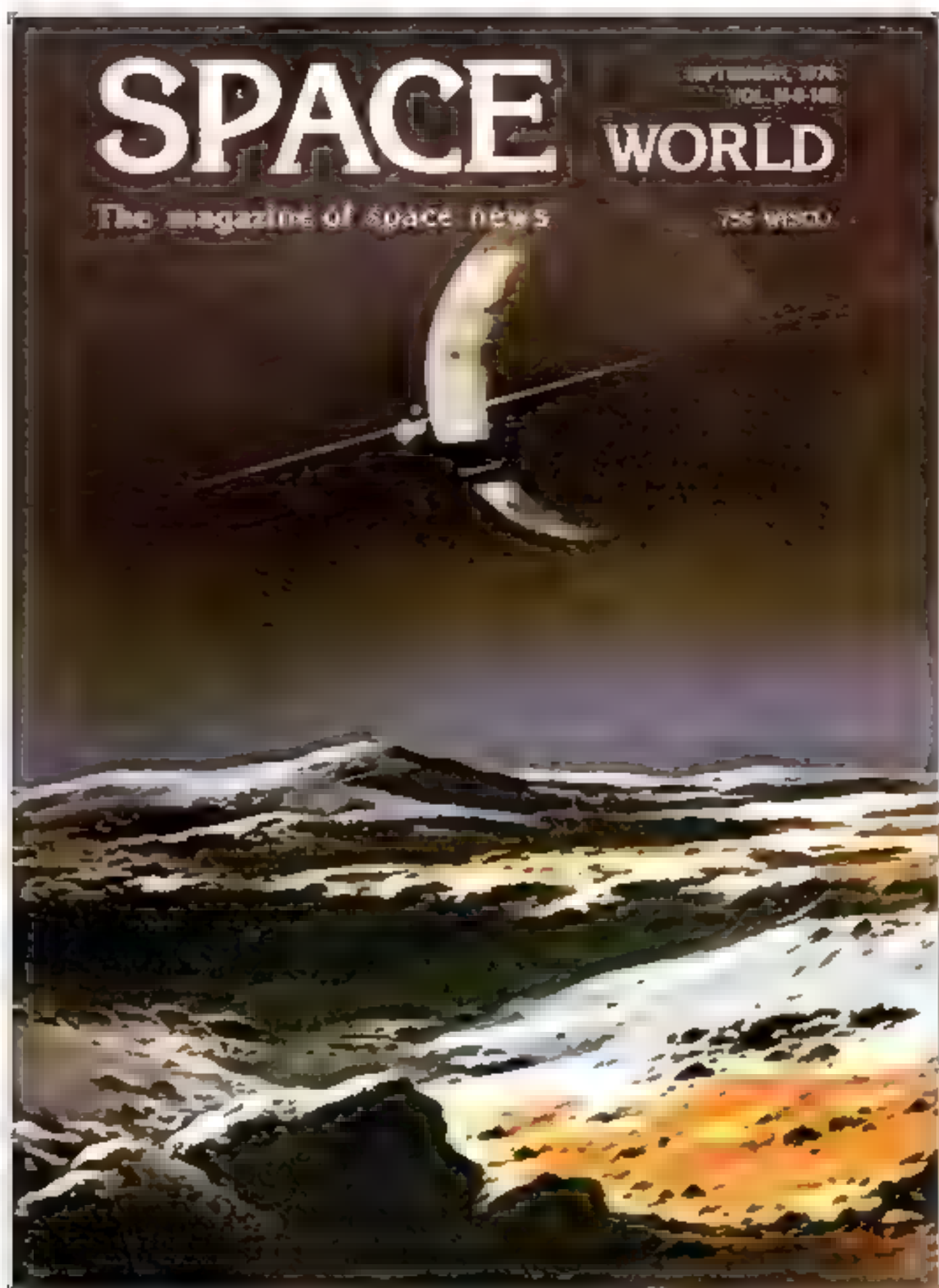
The magazine of space news

75c WISCO



MARINER JUPITER-SATURN COMMUNICATIONS ANTENNA

LIFE SUPPORT SYSTEMS FOR PLANET EARTH



SPACE WORLD

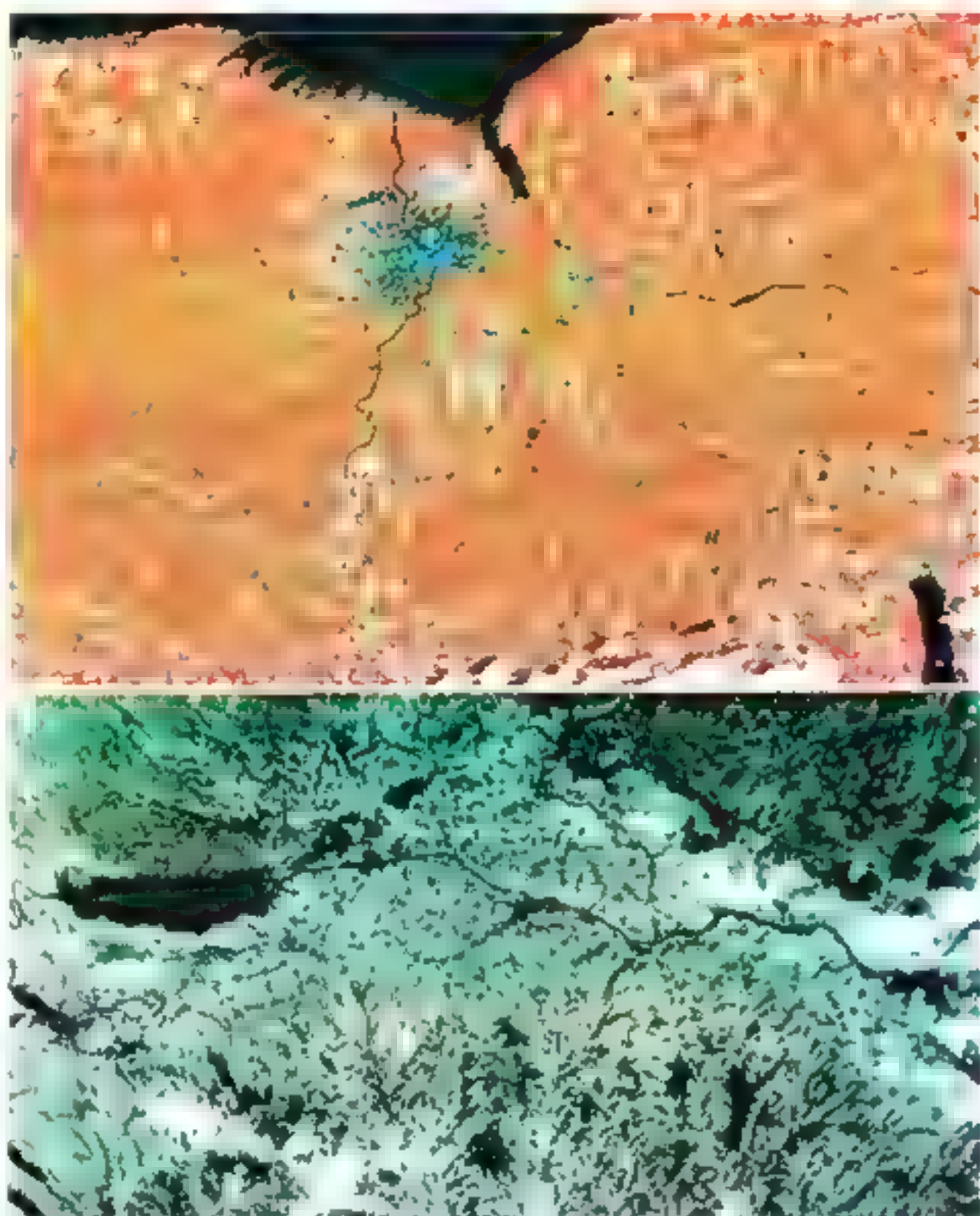
1977

SPACE WORLD

JANUARY 1977
VOL. 11 NO. 1

The magazine of space news

\$1.00 WISCO



SPACE WORLD

FEBRUARY 1977
VOL. 11 NO. 2

The magazine of space news

\$1.00 WISCO



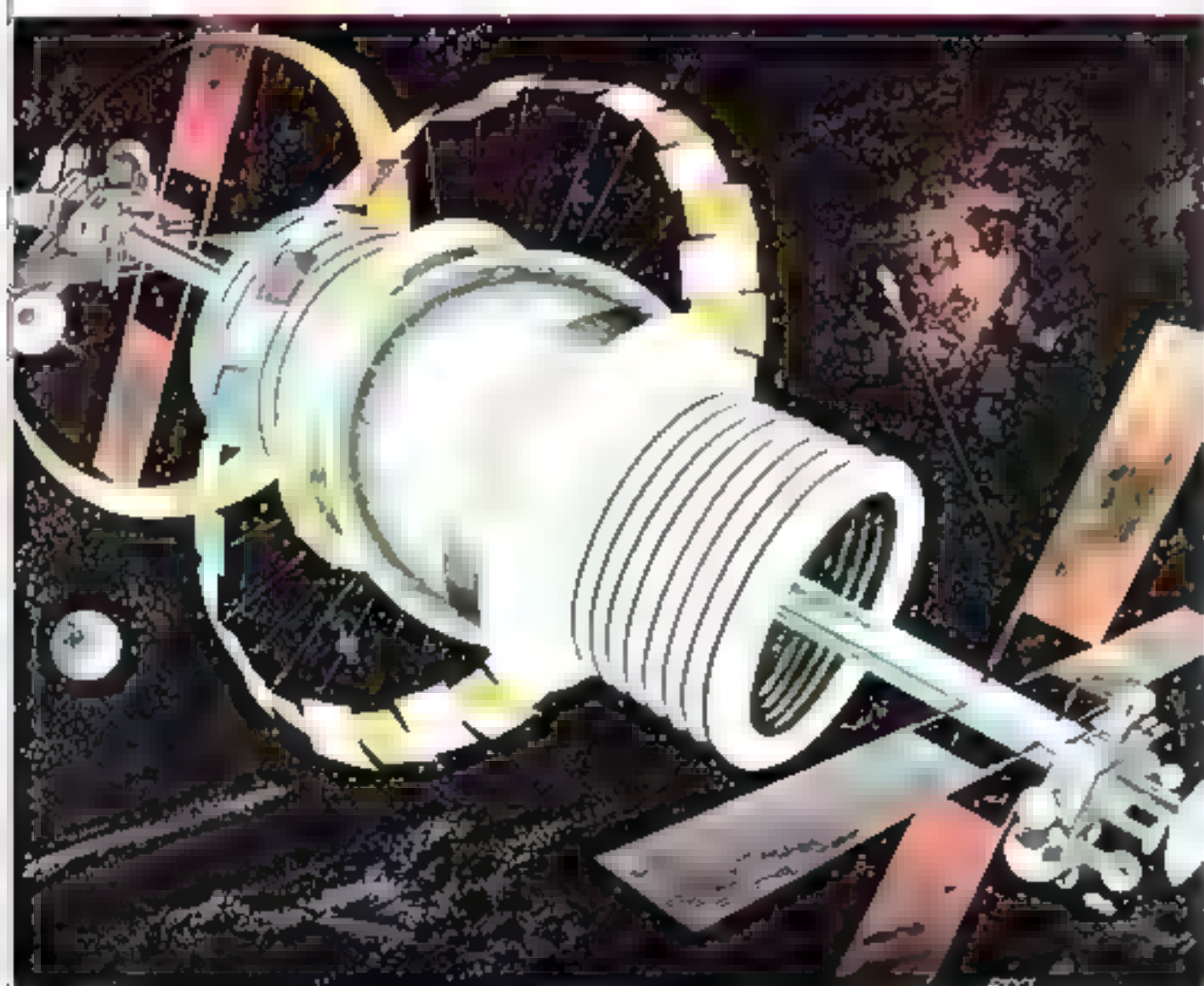
ASTRONAUTS & UFOs - The Whole Story!

SPACE WORLD

MARCH 1977
VOL. 11 NO. 3

The magazine of space news

\$1.00 WISCO



TOP SECRET
MILITARY SPACE CENTER

SPACE WORLD

APRIL 1977
VOL. 11 NO. 4

The magazine of space news

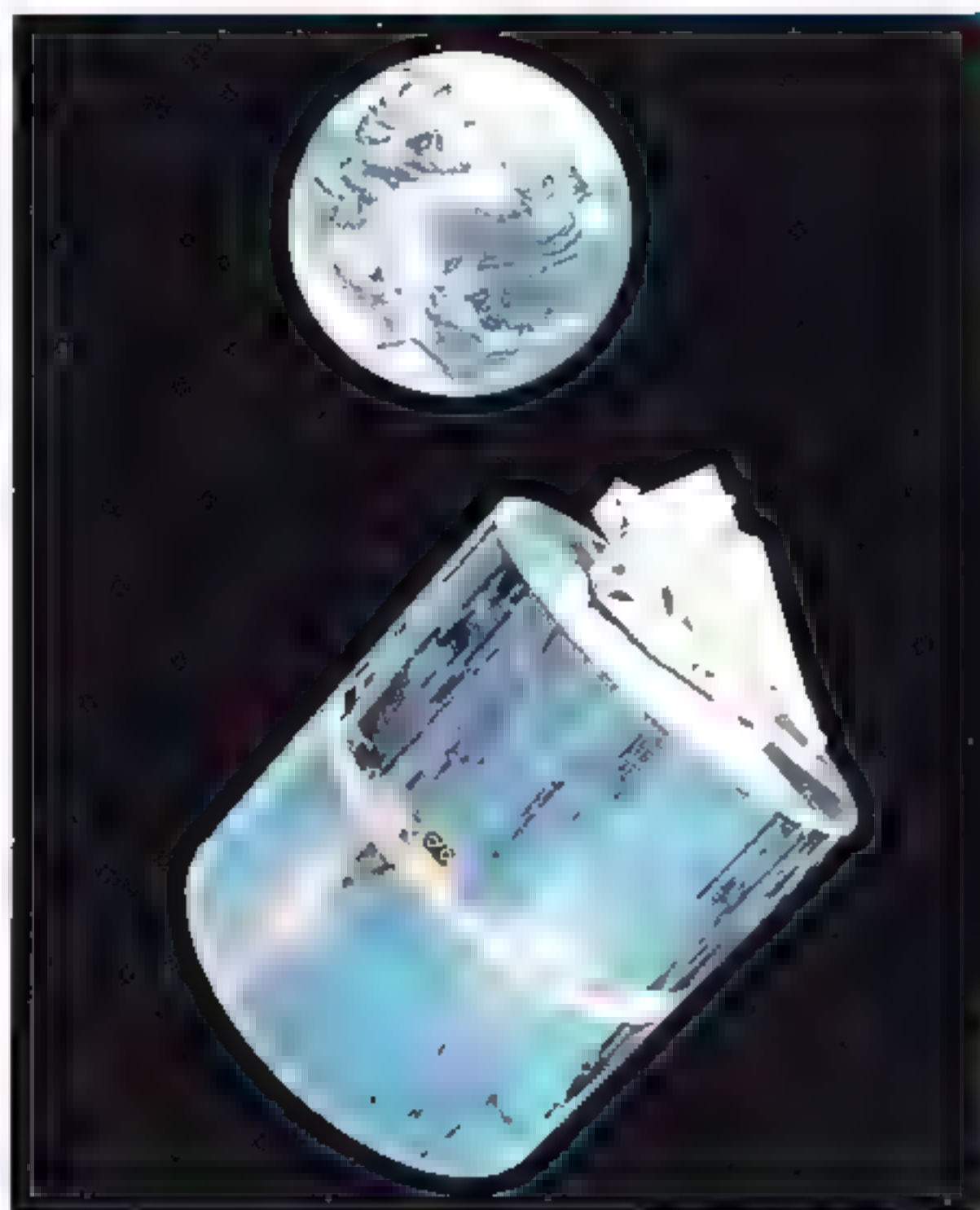
\$1.00 WISCO



VIKING TO MARS

SPACE WORLD

The magazine of space news



SPACE WORLD

The magazine of space news

JUNE 1977

VOL. 8, NO. 163

\$1.00 WISCO



SPACE WORLD

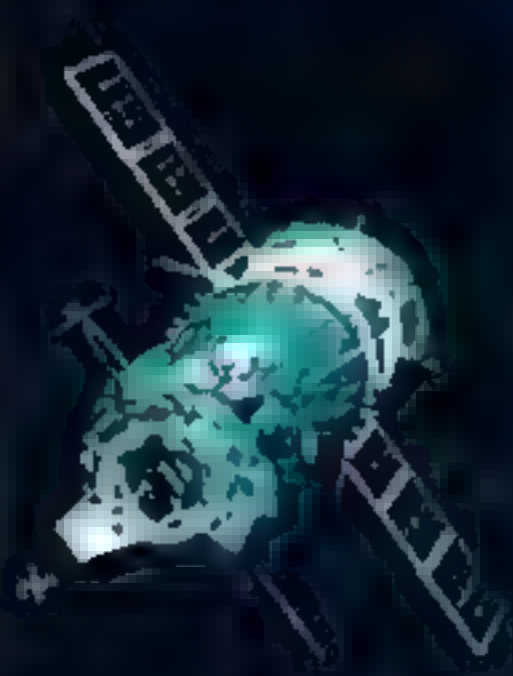
The magazine of space news

JULY 1977
VOL. 8, NO. 164

\$1.00 WISCO



THE SOYUZ
PROGRAM



SPACE WORLD

The magazine of space news

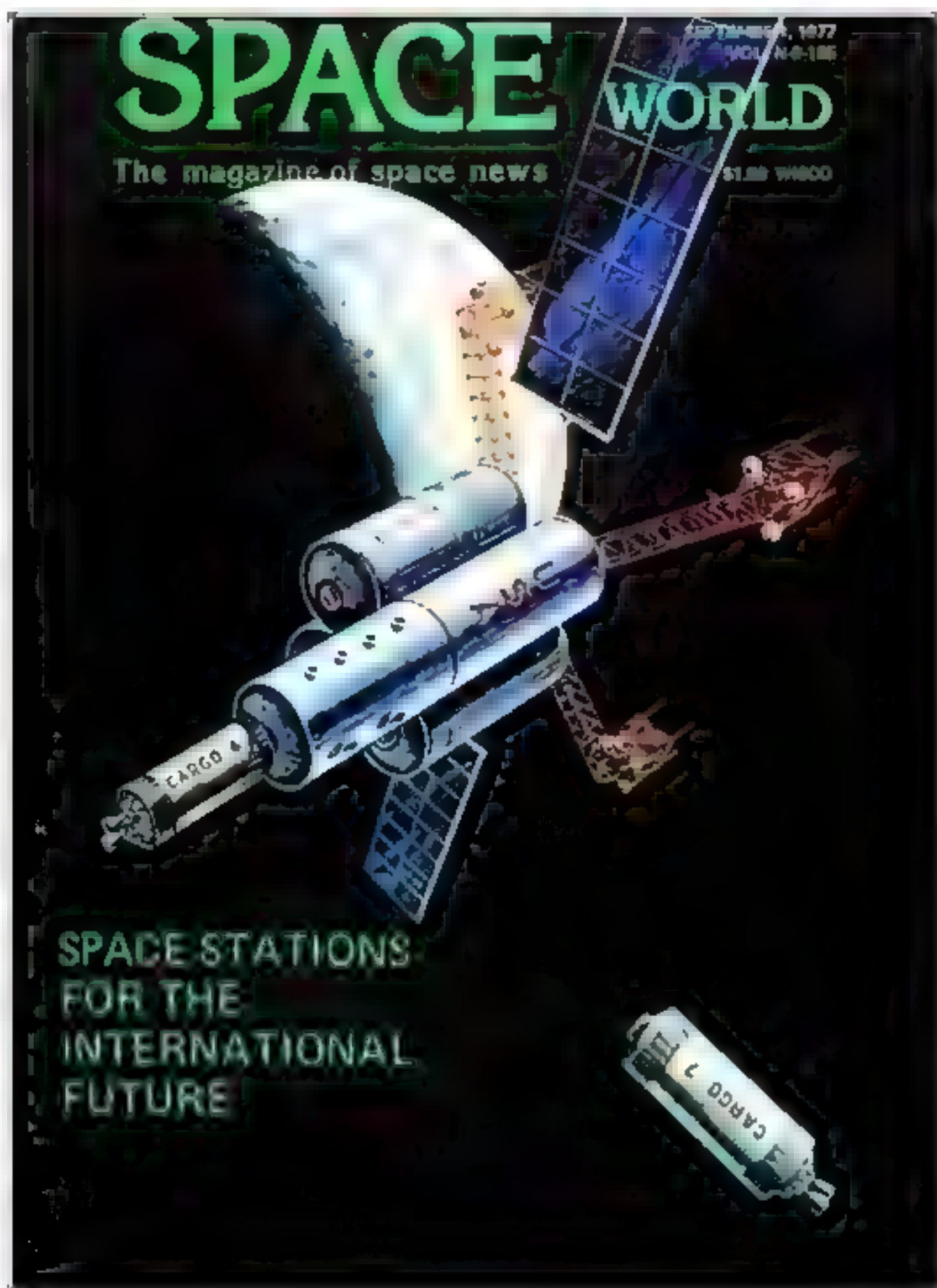
AUGUST 1977
VOL. 8, NO. 165

\$1.00 WISCO



SPACELAB

SHUTTLE PAYLOAD AT KSC



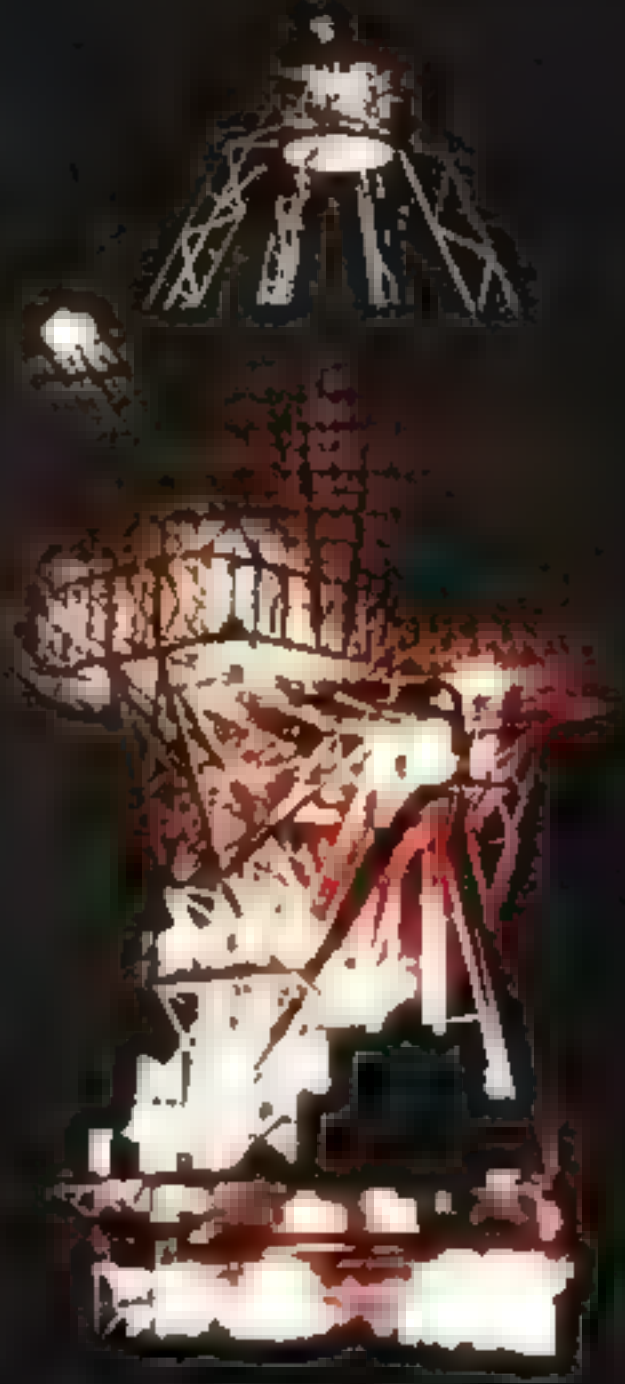
SPACE WORLD

1978

SPACE WORLD

The magazine of space news

JANUARY 1978
VOL. 15 #176



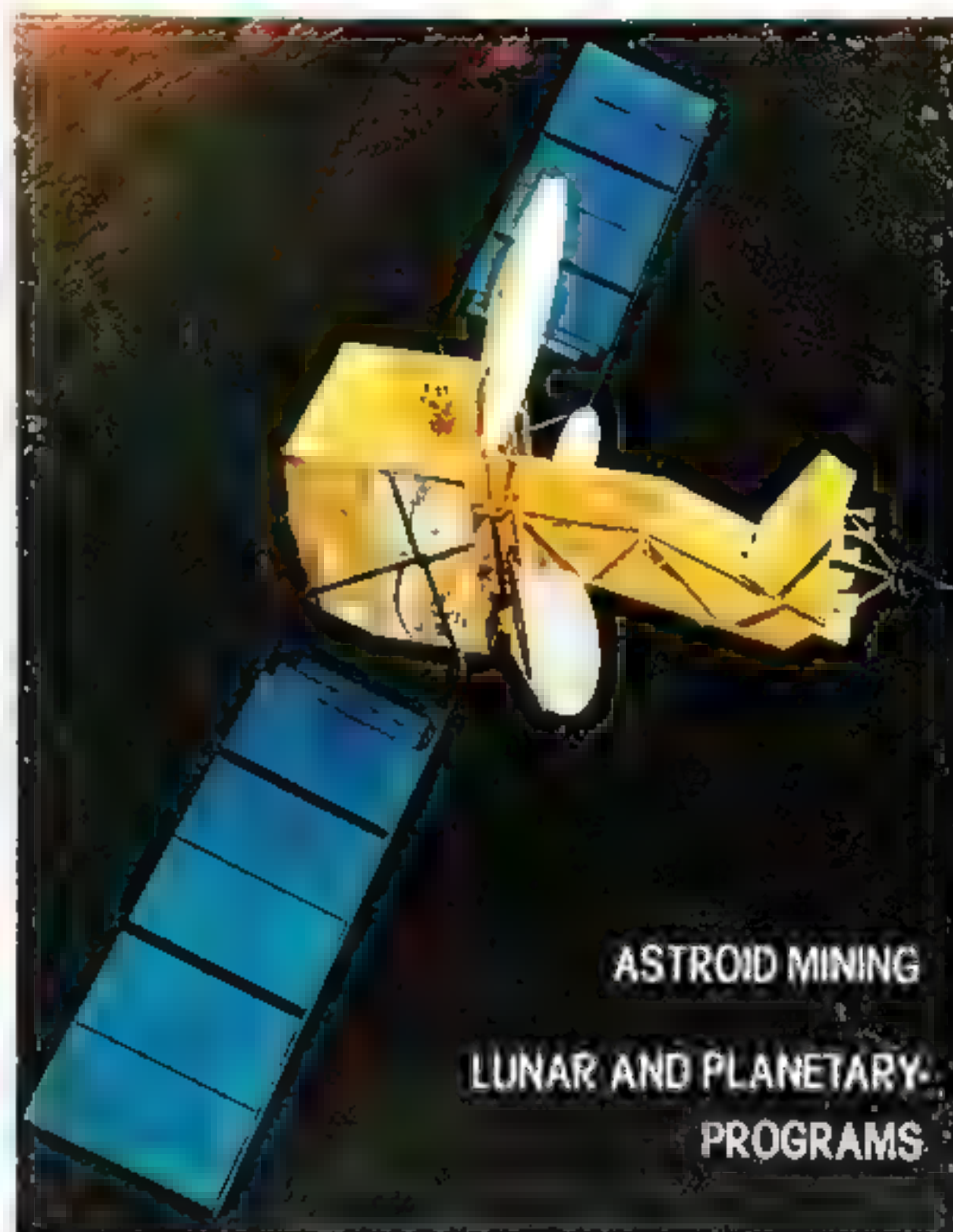
SPACE ASTRONOMY

SPACE WORLD

The magazine of space news

FEBRUARY, 1978
VOL. 15 #177

\$1.00 WISCO



ASTROID MINING

LUNAR AND PLANETARY
PROGRAMS

SPACE WORLD

The magazine of space news

MARCH 1978
VOL. 15 #178

\$1.00 WISCO



WOMEN IN SPACE
REOPENING SKYLAB

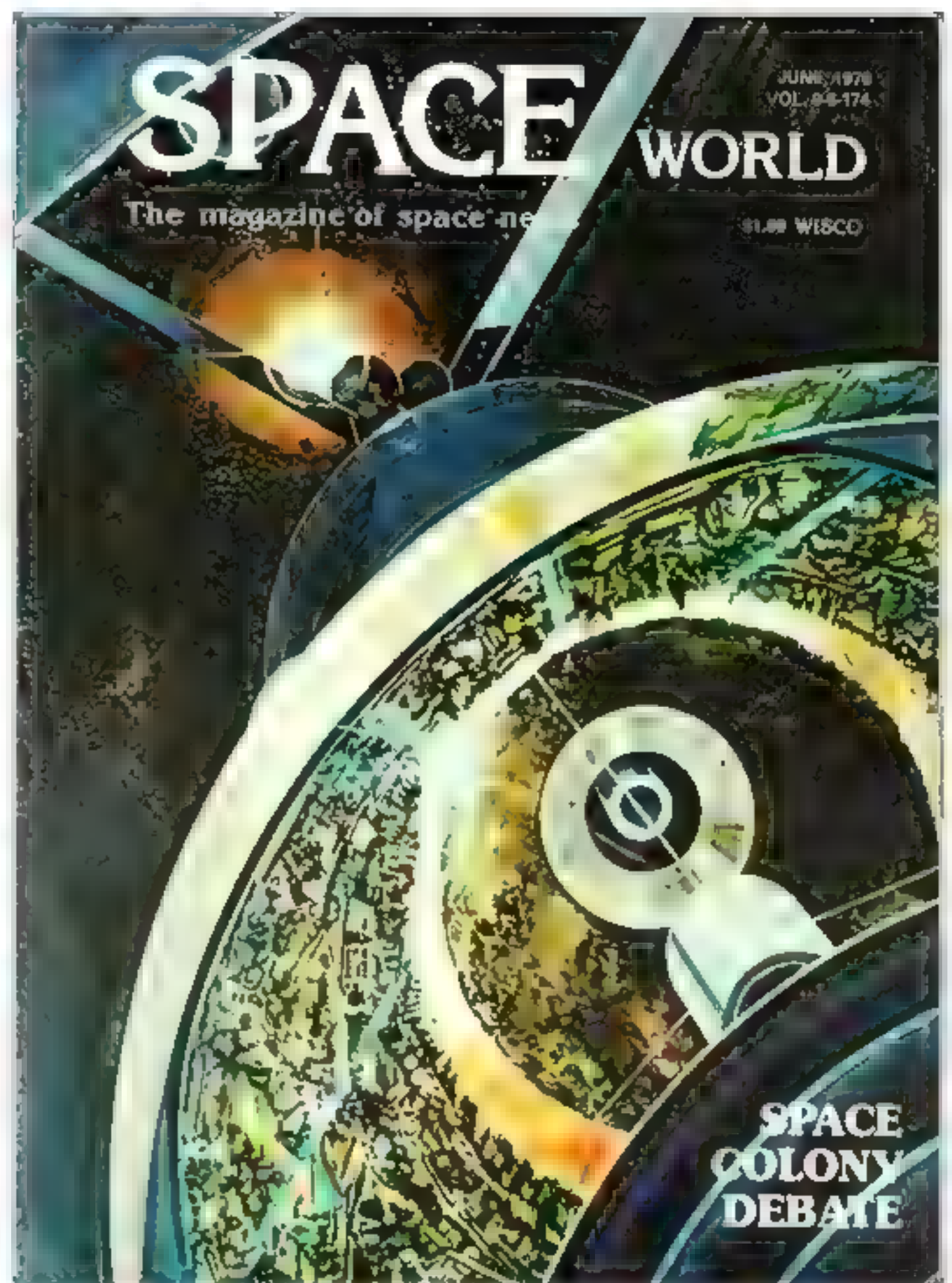
SPACE WORLD

VOL. 15 #179



EXPLORER 1 LAUNCHED
20 YEARS AGO

AMERICAN EXPERIMENTS
ON COSMOS 782

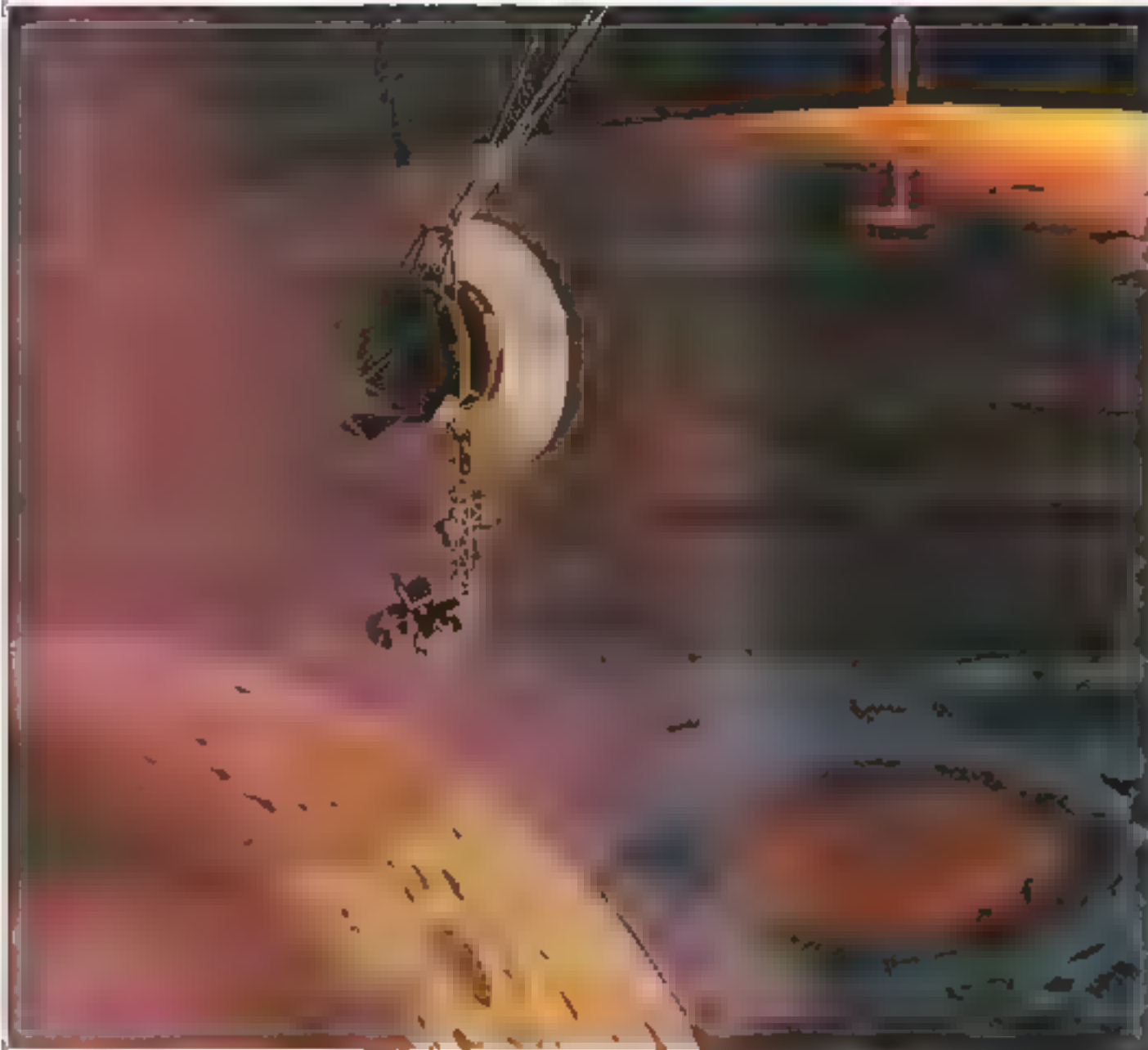


SPACE WORLD

OCTOBER 1978
VOL. 9-178

The magazine of space news

\$1.00 WISCO



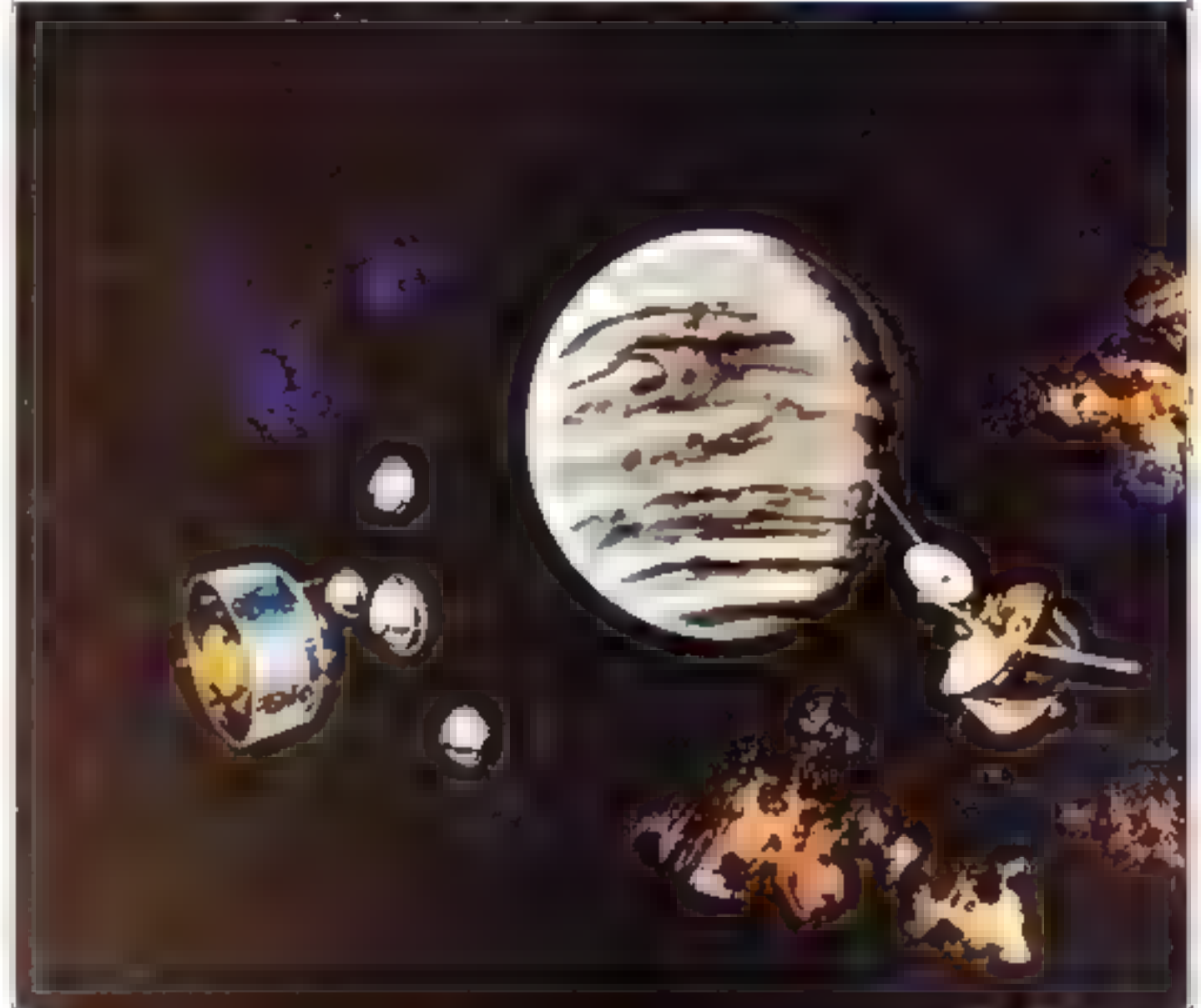
THE EXTRATERRESTRIAL IMPERATIVE
SPACE COLONIES - STILL SCIENCE FICTION

SPACE WORLD

NOVEMBER 1978
VOL. 10-179

The magazine of space news

\$1.00 WISCO



TARGET: VENUS



Note: In 1978 there were eleven
Space World magazines issued.
The August/September is a
combined issue.

SPACE **WORLD**

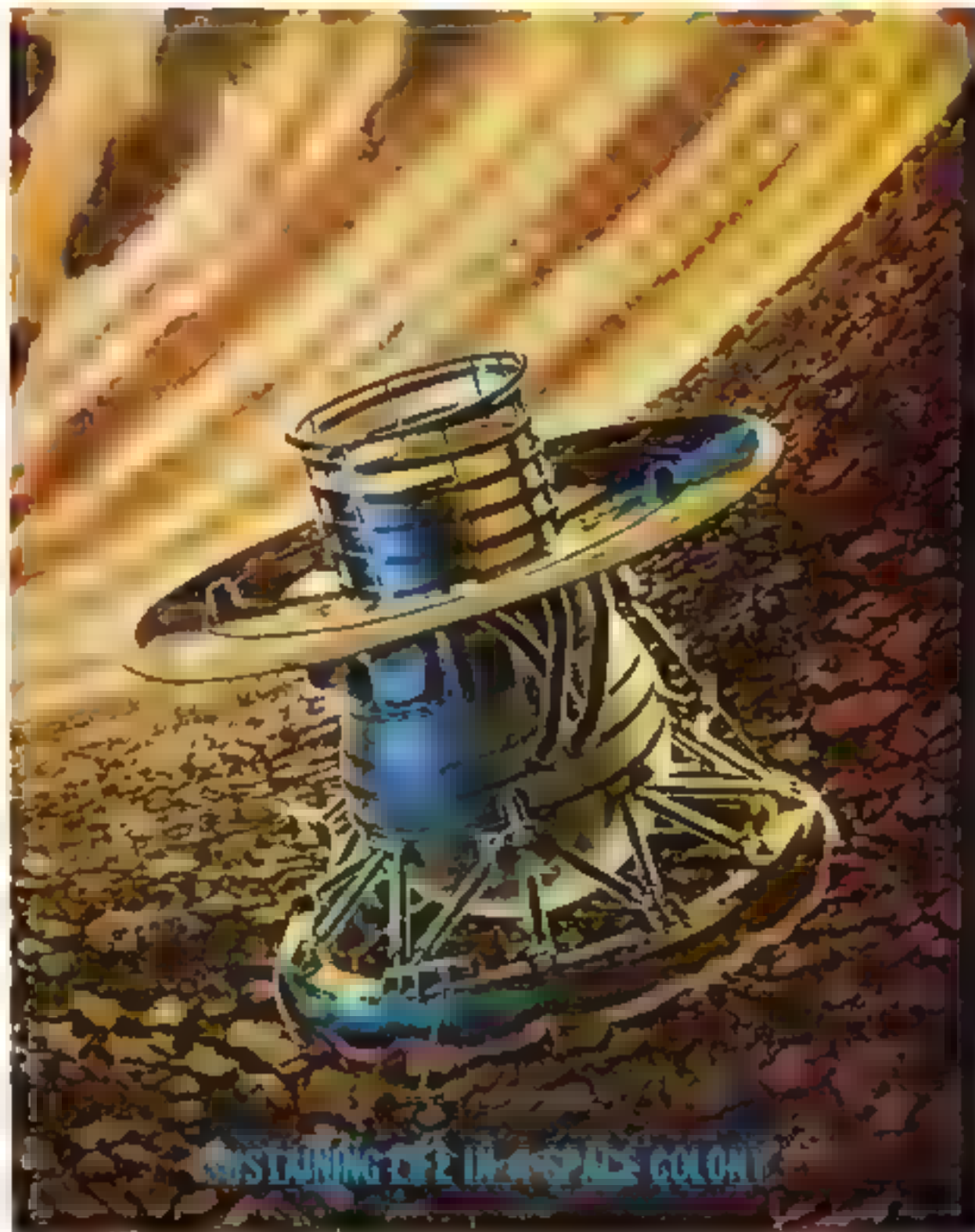
1979

SPACE WORLD

JANUARY, 1979
VOL. P-1-181

The magazine of space news

\$1.00 WISCO

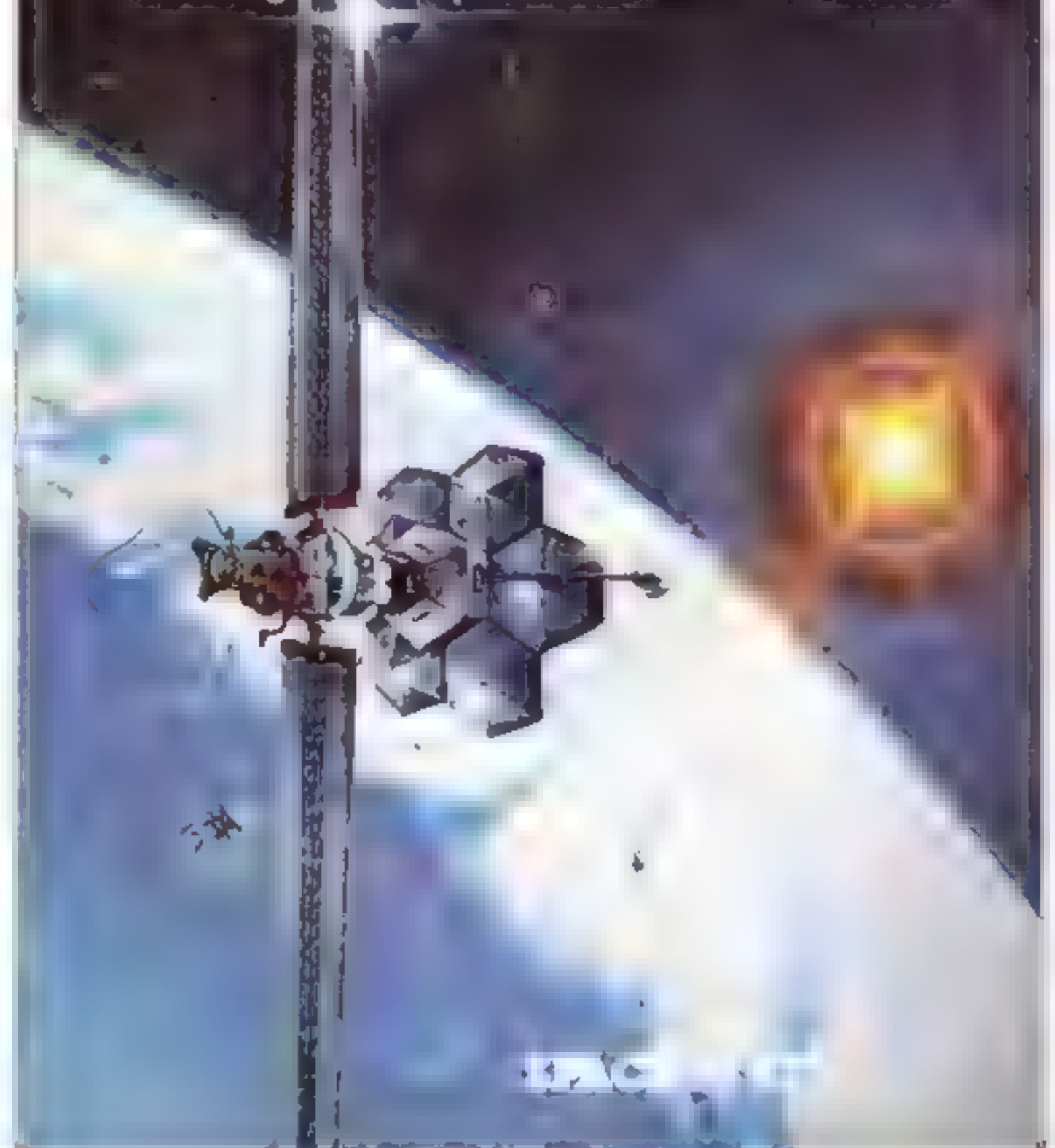


SPACE WORLD

JANUARY, 1979
VOL. P-1-181

The magazine of space news

\$1.00 WISCO



SPACE WORLD

MARCH, 1979
VOL. P-3-183

The magazine of space news

\$1.00 WISCO

Study of
Sun –
TOWARD A
NEW ERA

WOMEN
COMPLETE
SPACE
TESTS

MINING
OUTER
SPACE



SPACE WORLD

APRIL, 1979
VOL. P-4-184

The magazine of space news

\$1.00 WISCO

S
A
L
Y
U
T
6



SPACE WORLD

The magazine of space news

MAY 1979
VOL. P-5-185

\$1.00 WISCO



**A LONGER LIFELINE FOR SATELLITES
SPACE-BASED RADAR**

SPACE WORLD

The magazine of space news

JUNE JULY 1979
VOL. P-5-186-187

\$1.00 WISCO



VOYAGER VIEWS THE JOVIAN SYSTEM

SPACE WORLD

The magazine of space news

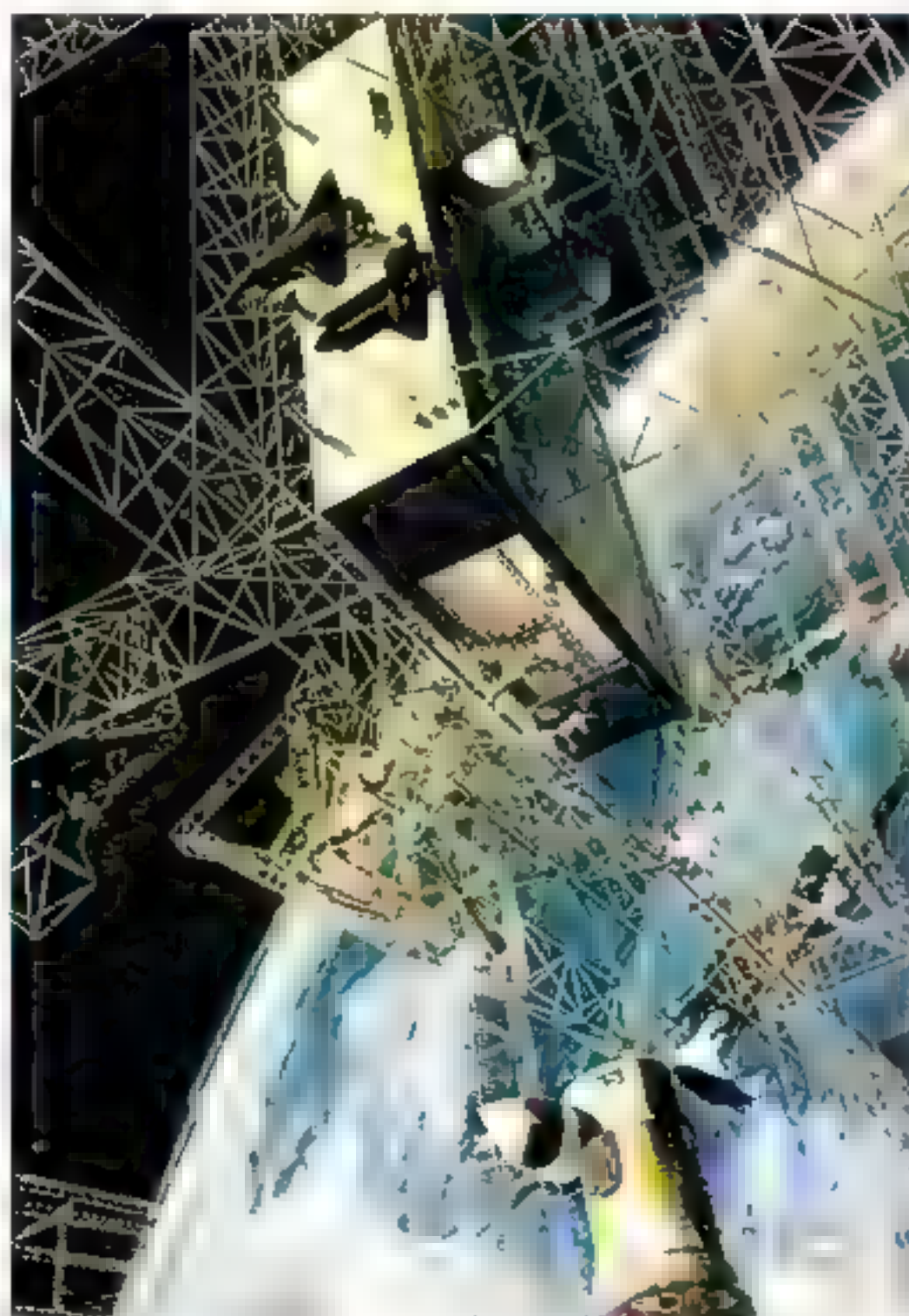
AUGUST SEPTEMBER 1979
VOL. P-6-188-189

\$1.00 WISCO

**SKY IS
THE
LIMIT**

**CANADA
IN
SPACE**

**THE
WAY
IT WAS**

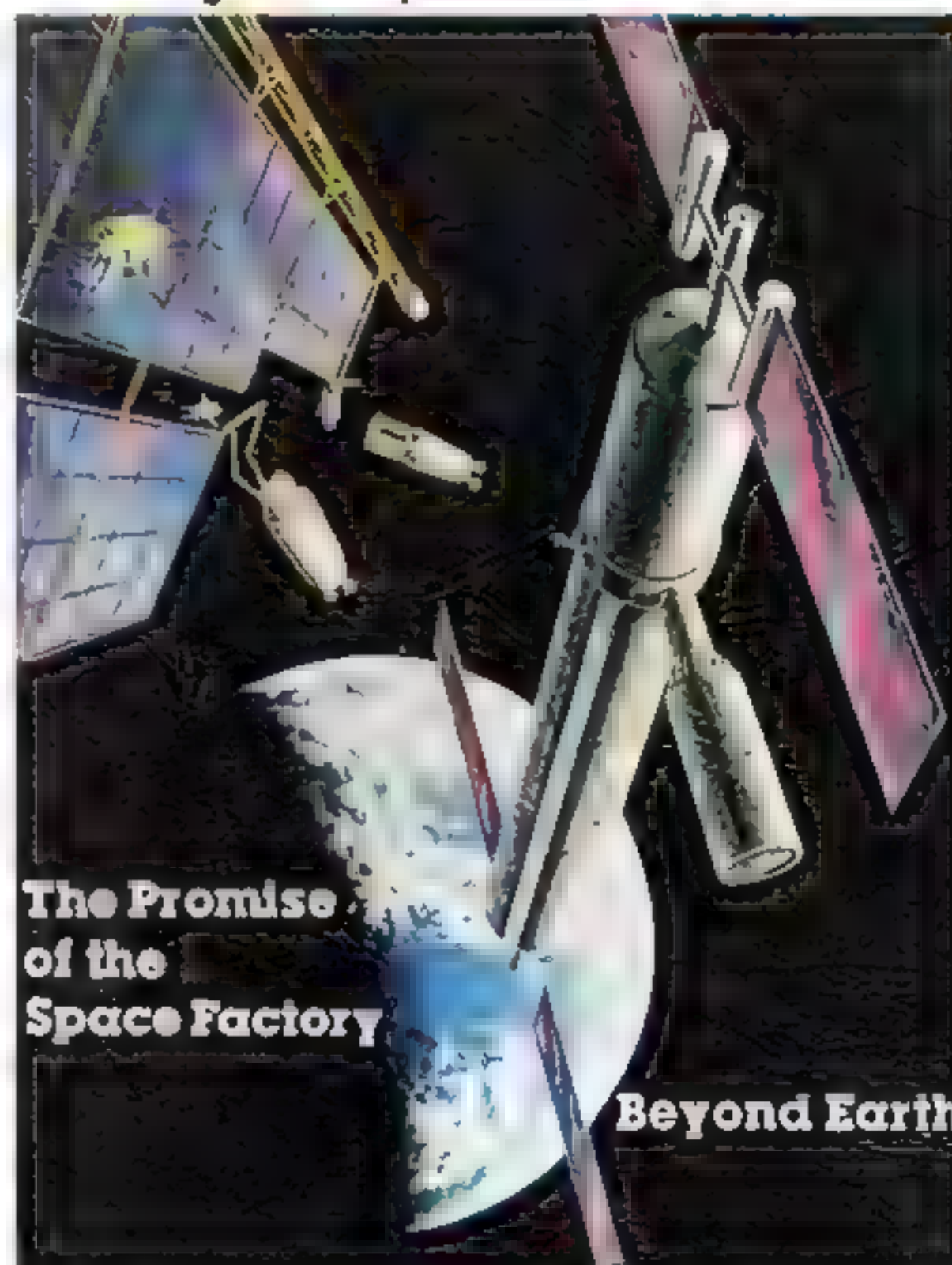


SPACE WORLD

The magazine of space news

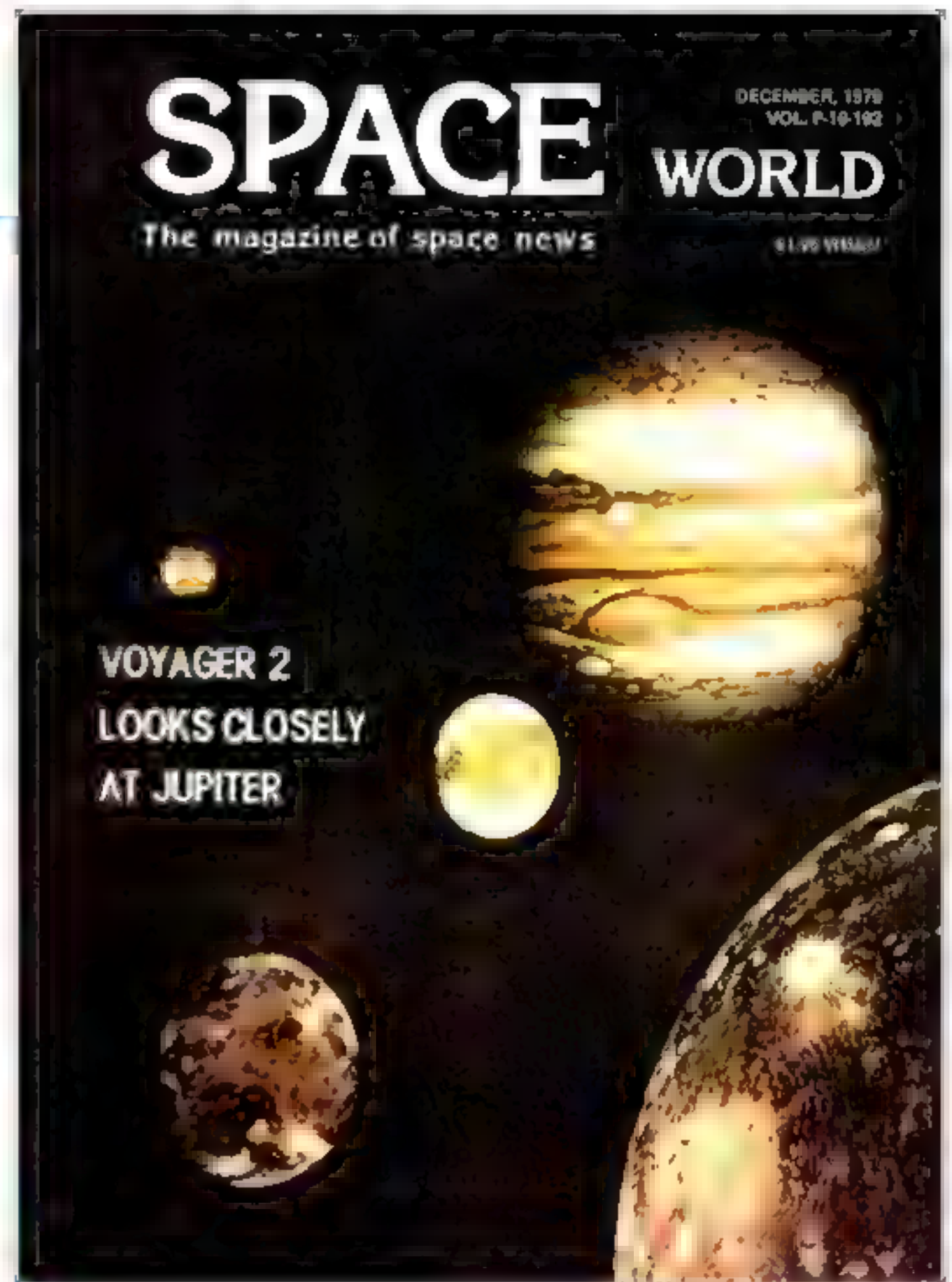
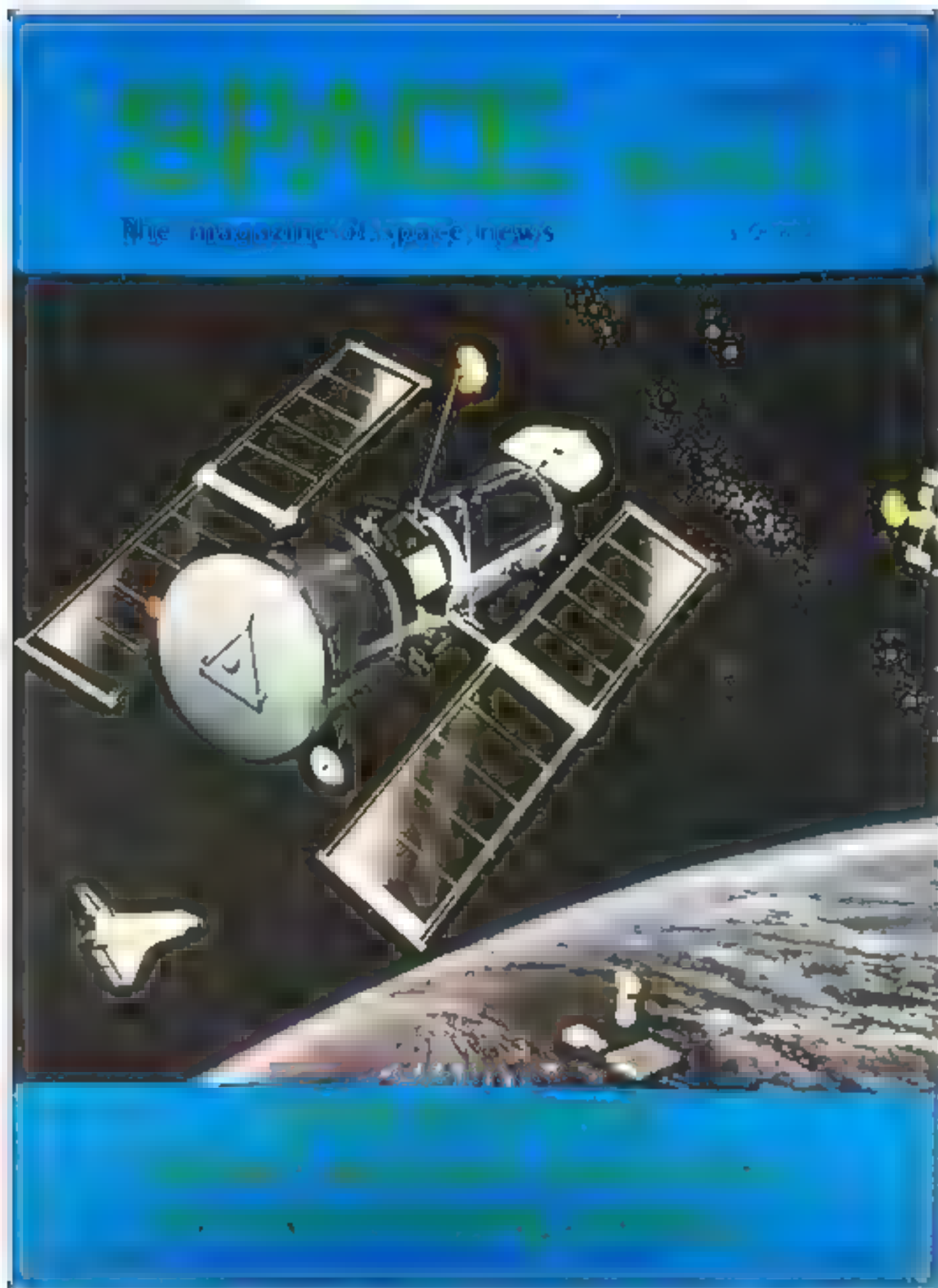
OCTOBER, 1979
VOL. P-6-190

\$1.00 WISCO



**The Promise
of the
Space Factory**

Beyond Earth



Note: In 1979 there were ten Space World magazines issued. The June/July and the August/September are combined issues.

SPACE WORLD

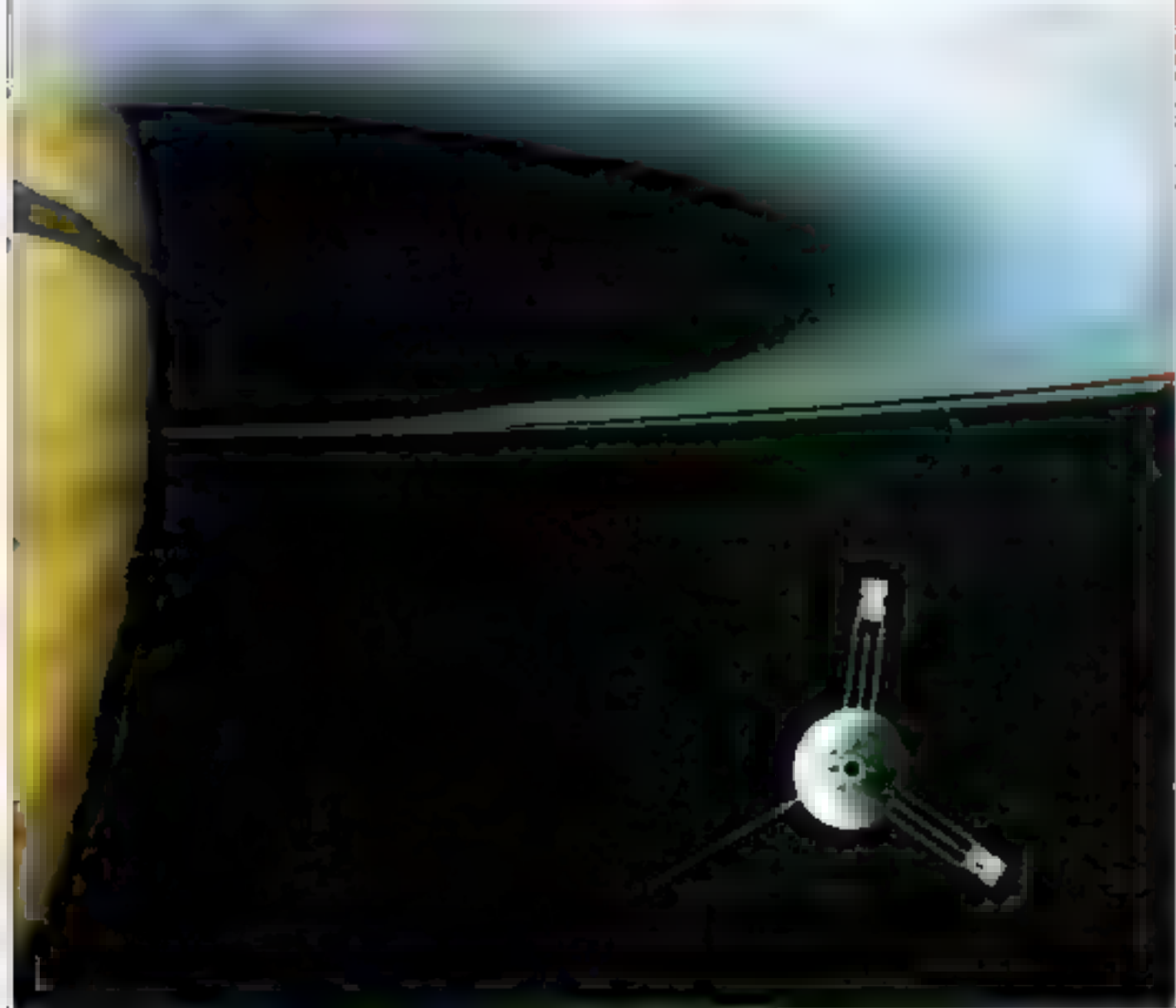
1980

SPACE WORLD

The magazine of space news

JANUARY 1980
VOL Q-1-193

\$1.25 WISCO



PIONEER SATURN ENCOUNTER

LUNAR GOAL REQUIRED HUGE BOOSTER

SPACE WORLD

The magazine of space news

FEBRUARY 1980
VOL Q-2-194

\$1.25 WISCO



ARIANE

HIGHLIGHTS OF 1979 ACTIVITIES

SPACE WORLD

The magazine of space news

MARCH 1980
VOL Q-3-195

\$1.25 WISCO



INTERIOR
DESIGN FOR
OUTER SPACE

SOLAR POWER
SATELLITE

SPACE WORLD

The magazine of space news

APRIL 1980
VOL P-4-196

\$1.00 WISCO

S
A
L
Y
U
T
6



SPACE WORLD

The magazine of space news

MAY 1980
VOL. Q-5 197

\$1.25 WISCO



LANDINGS IN SPACE

ALABAMA SPACE &
ROCKET CENTER

SPACE WORLD

The magazine of space news

JUNE JULY 1980
VOL. Q-6 198 199

\$1.25 WISCO

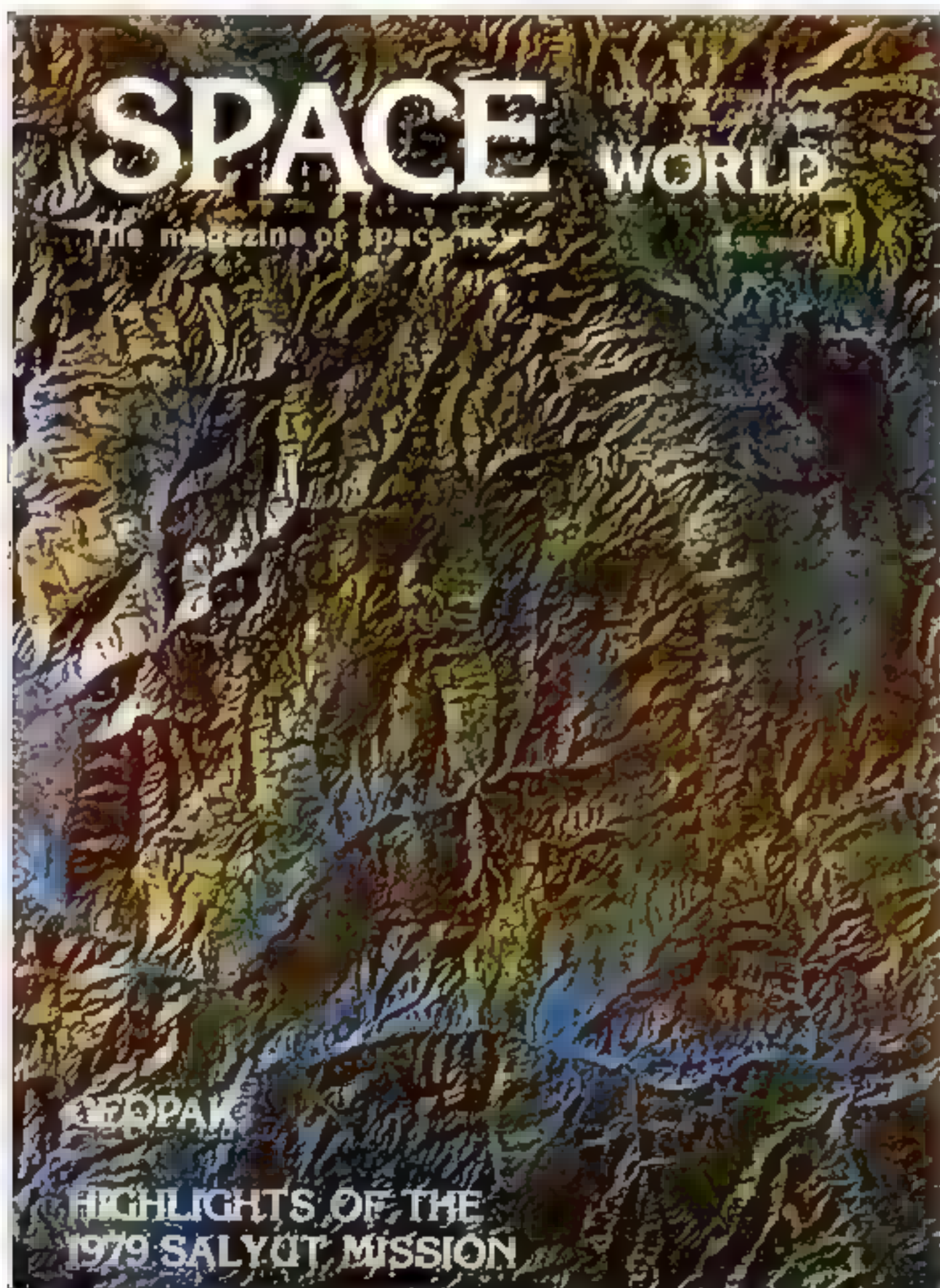


ORBITING OBSERVATORIES
scan the unseen universe

SPACE WORLD

The magazine of space news

WORLD



GEOPACK

HIGHLIGHTS OF THE
1979 SALYUT MISSION

SPACE WORLD

The magazine of space news

OCTOBER 1980
VOL. Q-10-202

\$1.25 WISCO



SATELLITES AND
WORLD FOOD
RESOURCES
USC BEGINS
SPACE LAB
WORK

SPACE WORLD

The magazine of space news

NOVEMBER, 1980
VOL. 9-11 202

\$1.25 WISCO

OTRAG

THE FIRST
PRIVATE
ASTRONAUT

FOOD
FOR



SPACE WORLD

The magazine of space news

DECEMBER, 1980
VOL. 9-11 204

\$1.25 WISCO

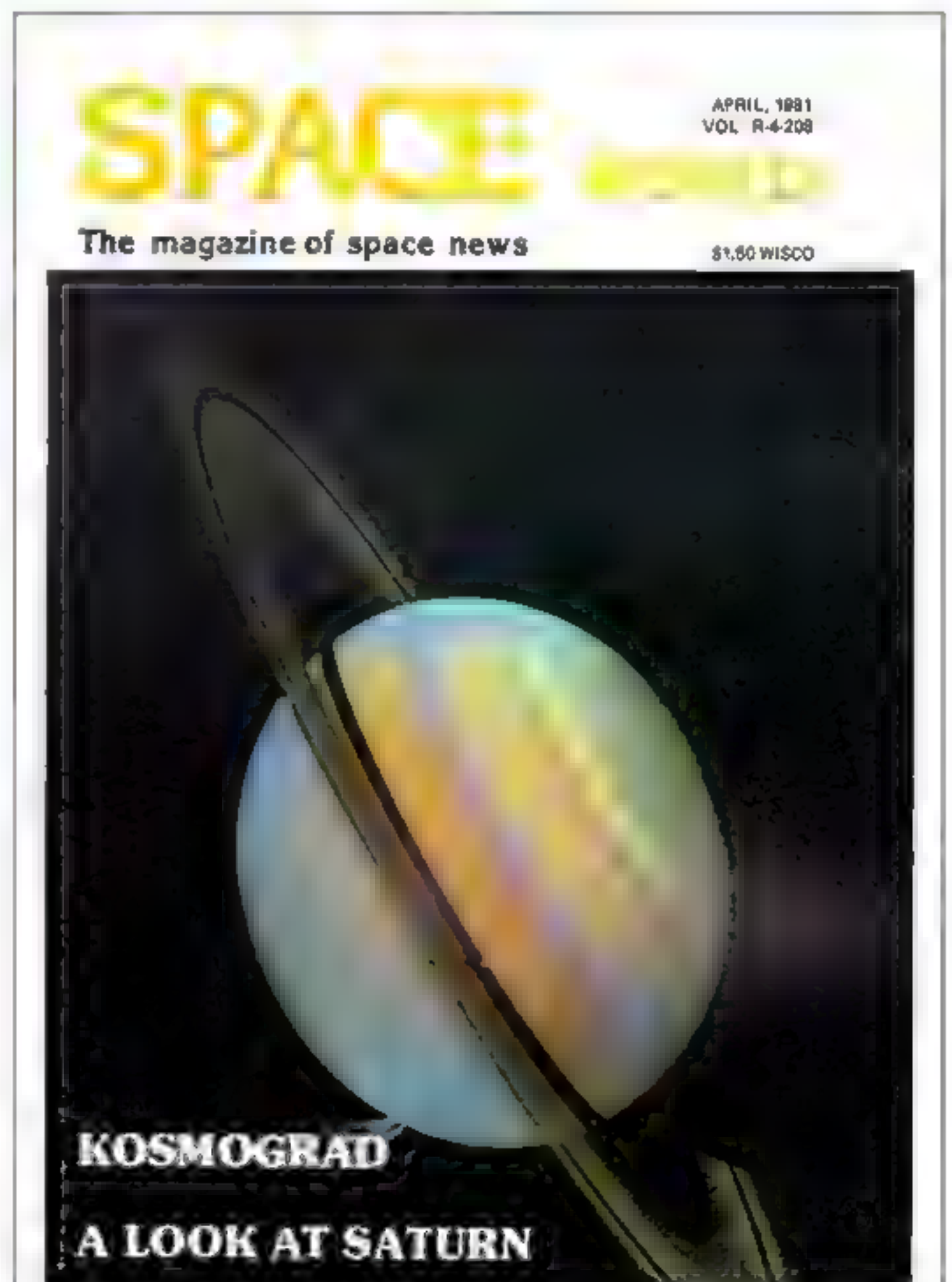


THE SOLAR SYSTEM: Blueprints for tomorrow

**Note: In 1980 there were ten Space World magazines issued.
The June/July and the August/September are combined issues.**

SPACE WORLD

1981



SPACE WORLD

The magazine of space news

MAY 1981
VOL. 8-5-209

\$1.50 WISCO

COLUMBIA
THE GEM OF
THE U.S.A.



SPACE WORLD

The magazine of space news

JUNE-JULY 1981
VOL. 8-6-210-211

\$1.50 WISCO



SPACE WORLD

The magazine of space news

AUGUST-SEPTEMBER 1981
VOL. 8-8-212-213

\$1.50 WISCO

WHY
OWNS
OUTER
SPACE?

Voyager 2

Space
Shuttle
Scrapbook

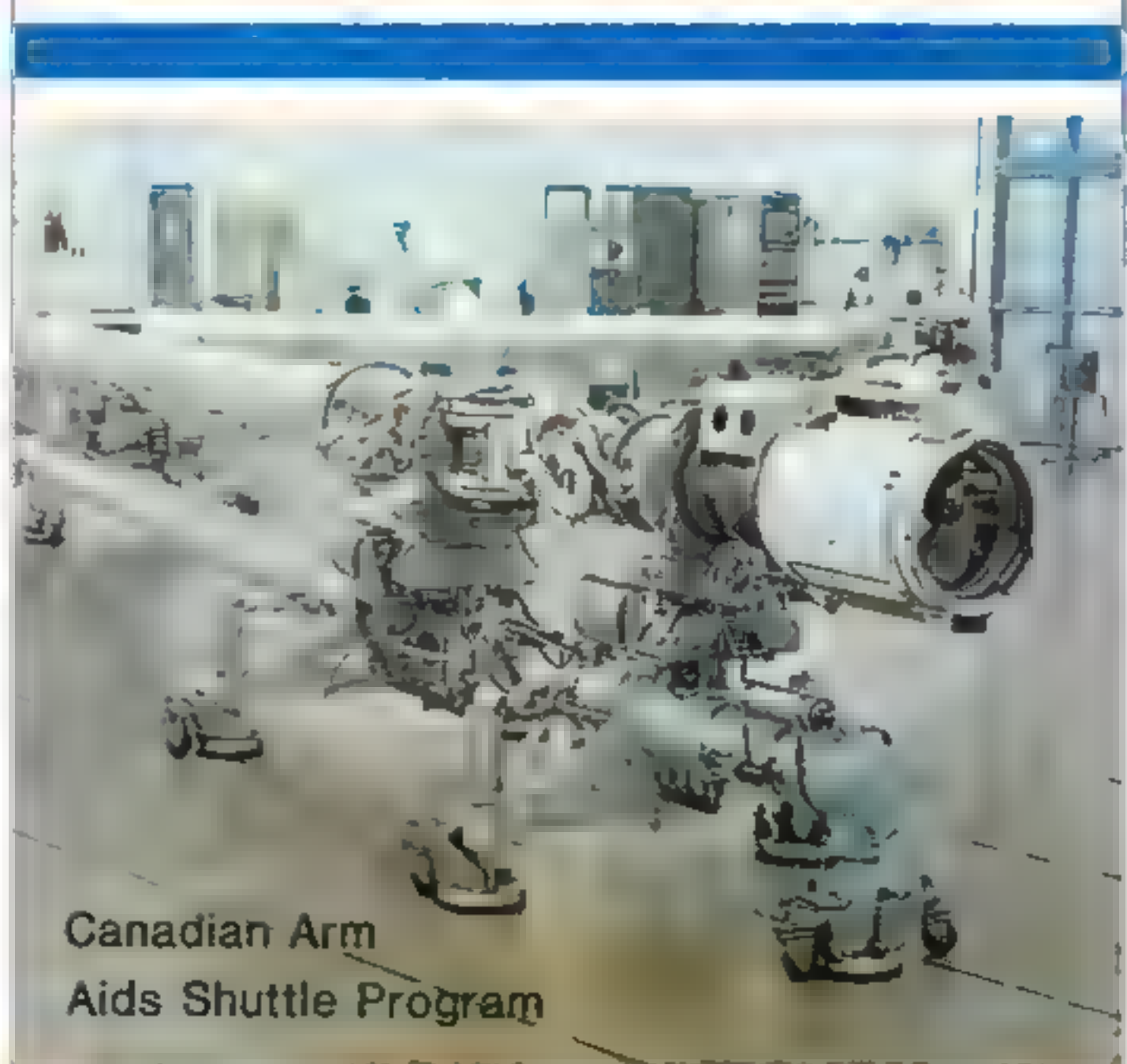


SPACE WORLD

The magazine of space news

OCTOBER 1981
VOL. 8-10-214

\$1.50 WISCO



Canadian Arm
Aids Shuttle Program

SPACE WORLD

The magazine of space news

NOVEMBER, 1981
VOL. R-11-215

\$1.50 WISCO

ASTRONAUTS
FOR THE
SPACE SHUTTLE



ABOARD THE SPACE SHUTTLE
THE NEW ASTRONAUT BREED

SPACE WORLD

The magazine of space news

DECEMBER, 1981
VOL. R-12-216

\$1.50 WISCO

Emergency
Medical
Procedures
in Space



**Note: In 1981 there were ten Space World magazines issued.
The June/July and the August/September are combined issues.**

SPACE WORLD

1982

SPACE WORLD

January 1982
\$1.50



Published in cooperation with
NATIONAL SPACE INSTITUTE



A Third Stage for the Space Shuttle

SPACE WORLD

February 1982
\$1.50



Published in cooperation with
NATIONAL SPACE INSTITUTE



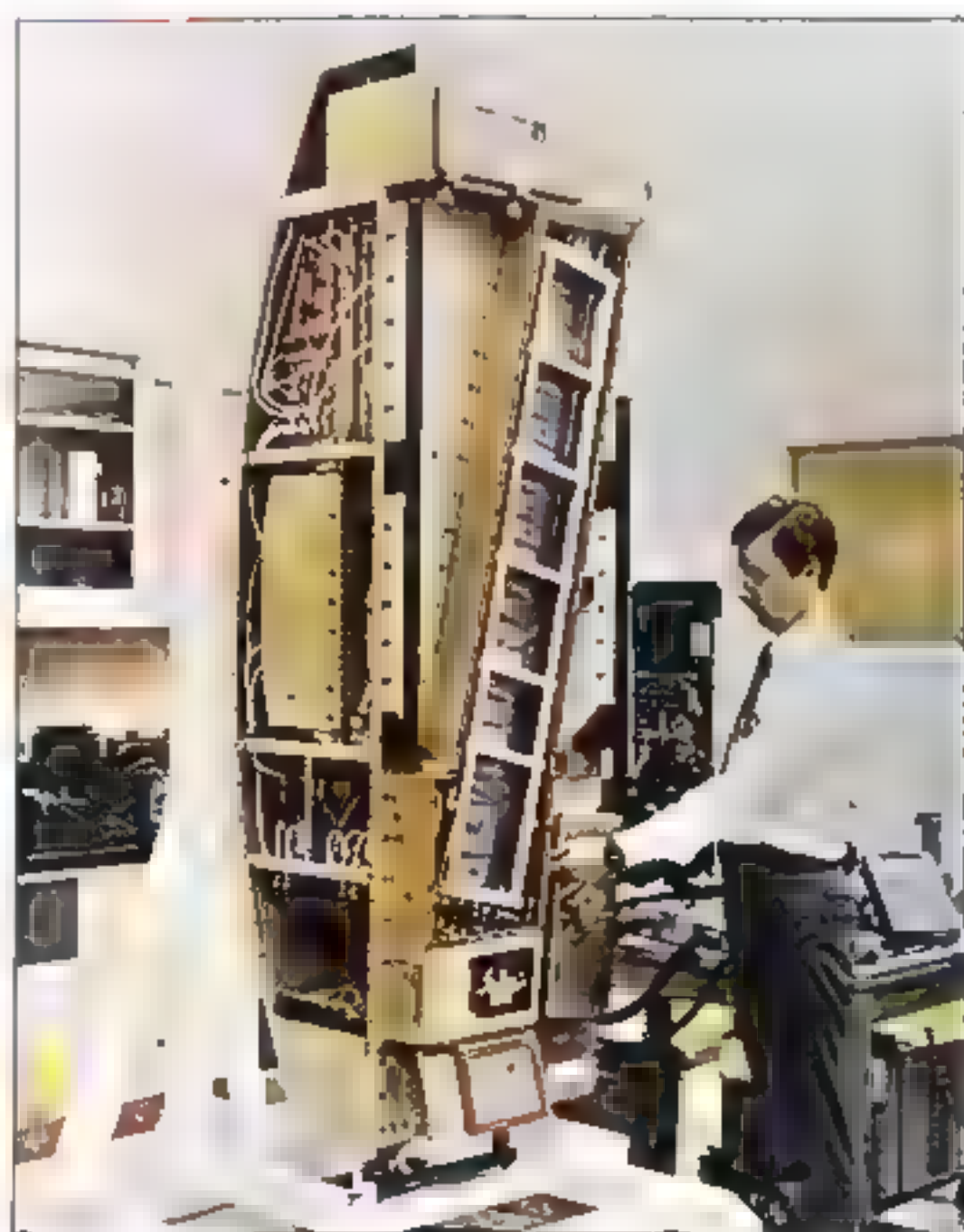
Waiting For The Repairman

SPACE WORLD

March 1982
\$1.50



Published in cooperation with
NATIONAL SPACE INSTITUTE



The First Space Factory

SPACE WORLD

April 1982
\$1.50



Published in cooperation with
NATIONAL SPACE INSTITUTE



The National Air and Space Museum

SPACE WORLD

May 1982
\$1.50



Published in cooperation with
NATIONAL SPACE INSTITUTE



Pathfinder For Space Science

SPACE WORLD

June
July 1982
\$1.50



Published in cooperation with
NATIONAL SPACE INSTITUTE



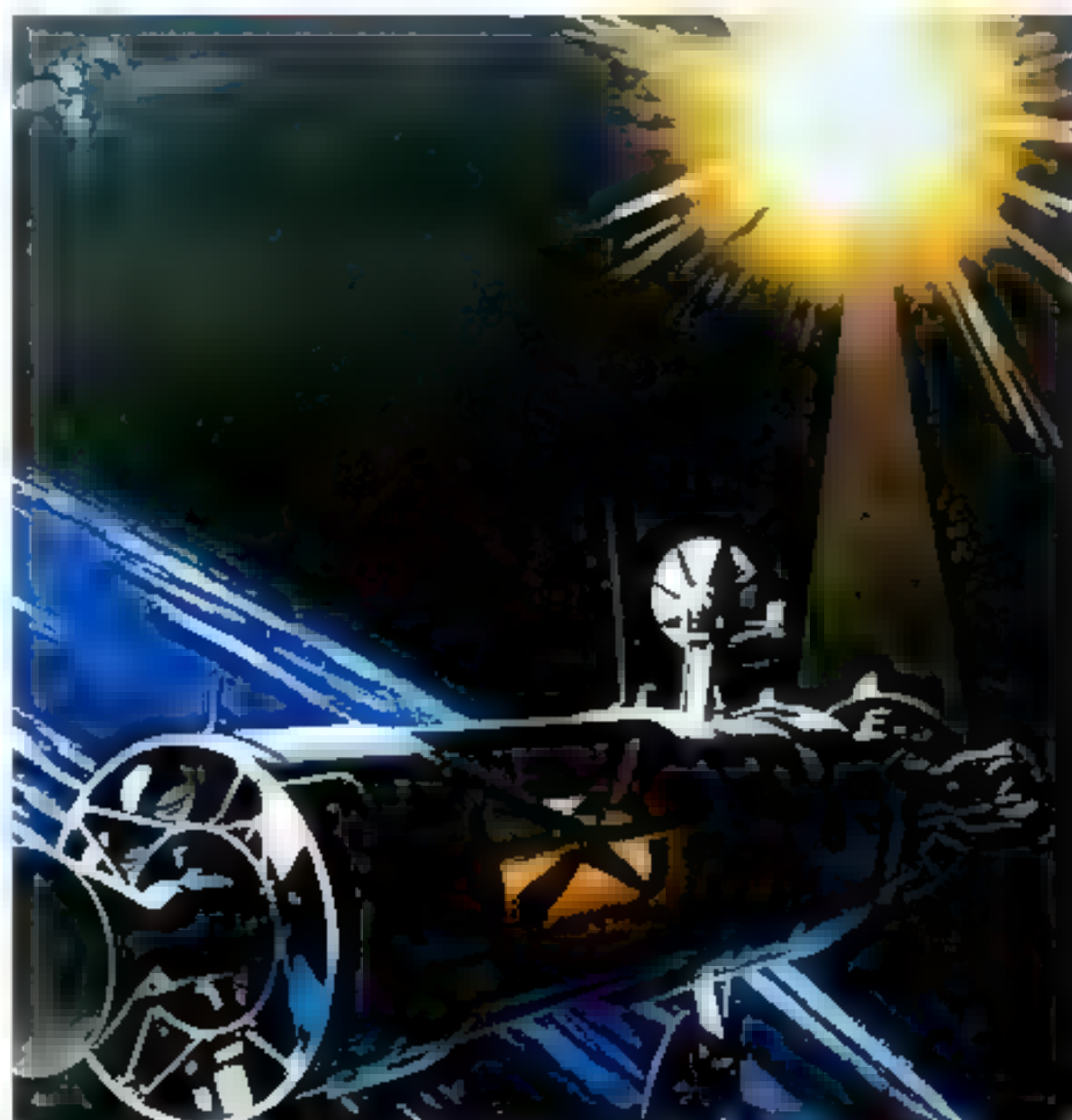
USAF Cargo For Space Shuttle

SPACE WORLD

August
September
1982
\$1.50



Published in cooperation with
NATIONAL SPACE INSTITUTE



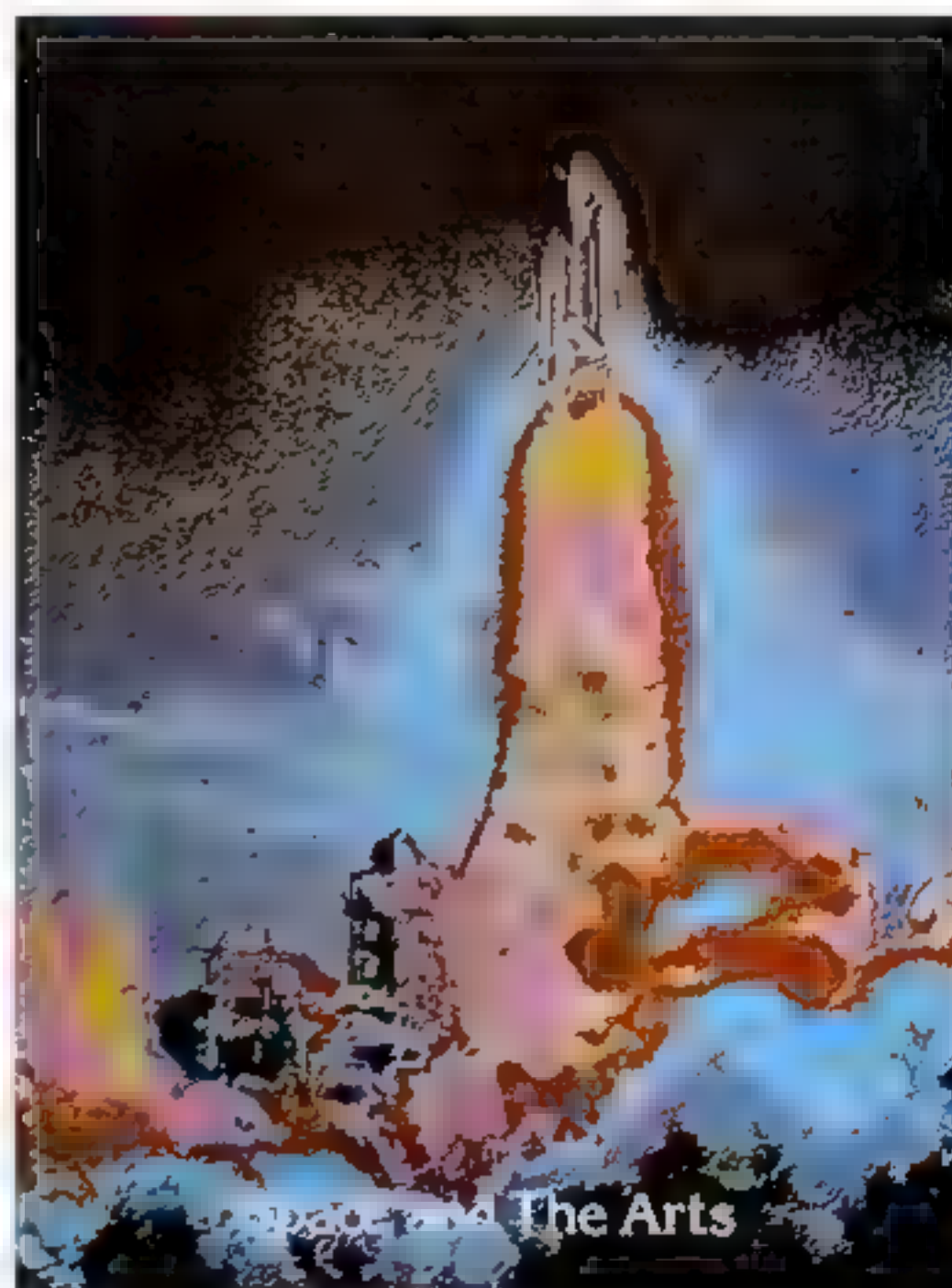
The Real Star Wars

SPACE WORLD

October
1982
\$1.50



Published in cooperation with
NATIONAL SPACE INSTITUTE



The Arts

SPACE WORLD

November
1982
\$1.50



Published in cooperation with

NATIONAL SPACE INSTITUTE

**On The New
Conestoga Trail**



SPACE WORLD

December
1982
\$1.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



Spinoffs from Space Technology

**Note: In 1982 there were ten Space World magazines issued.
The June/July and the August/September are combined issues.**

SPACE WORLD

1983

SPACE WORLD

January
1983
\$1.50

 Published in cooperation with
NATIONAL SPACE INSTITUTE

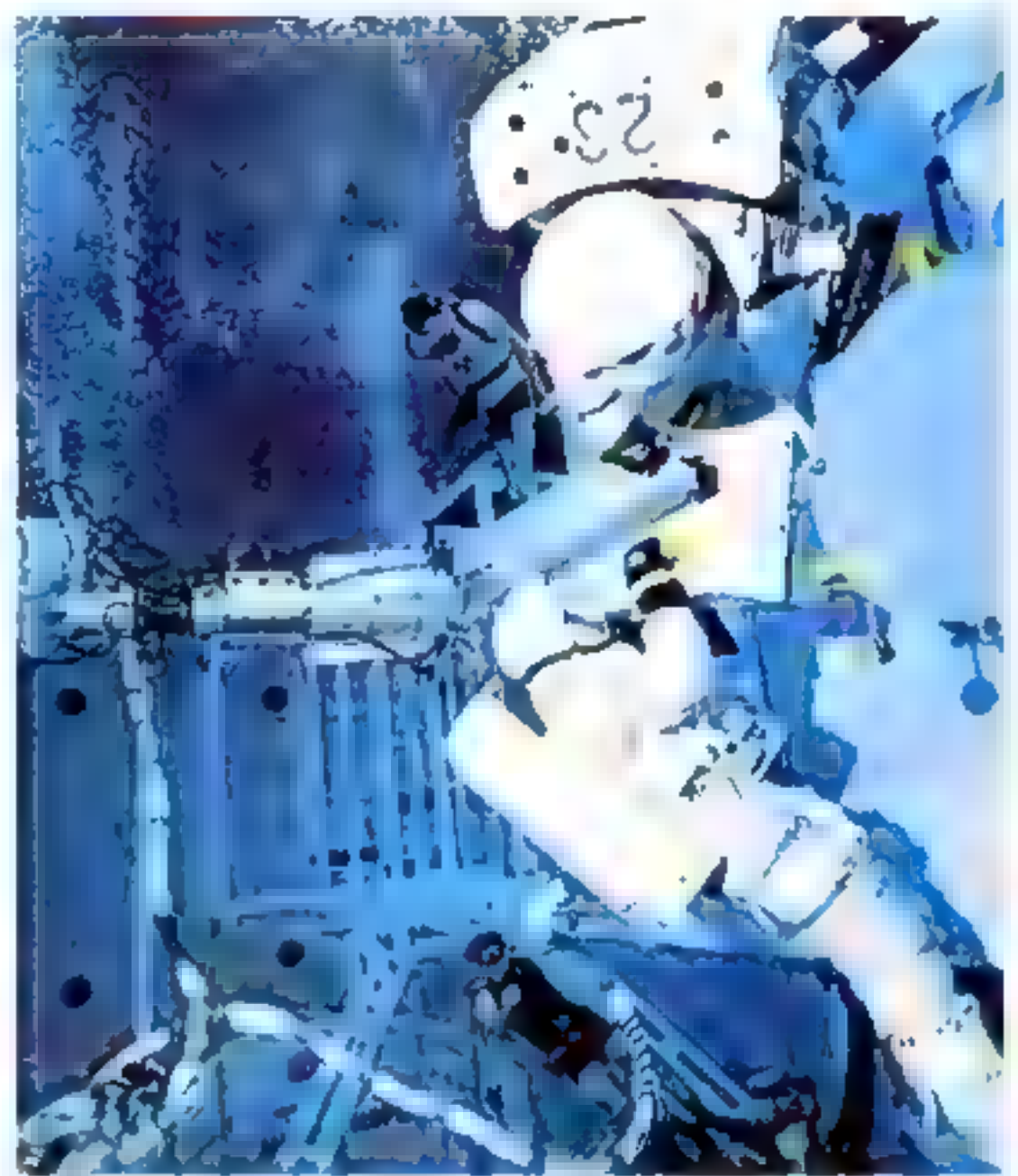


Shuttle Delivers: Satellites Now; People Next?

SPACE WORLD

February
1983
\$1.50

 Published in cooperation with
NATIONAL SPACE INSTITUTE

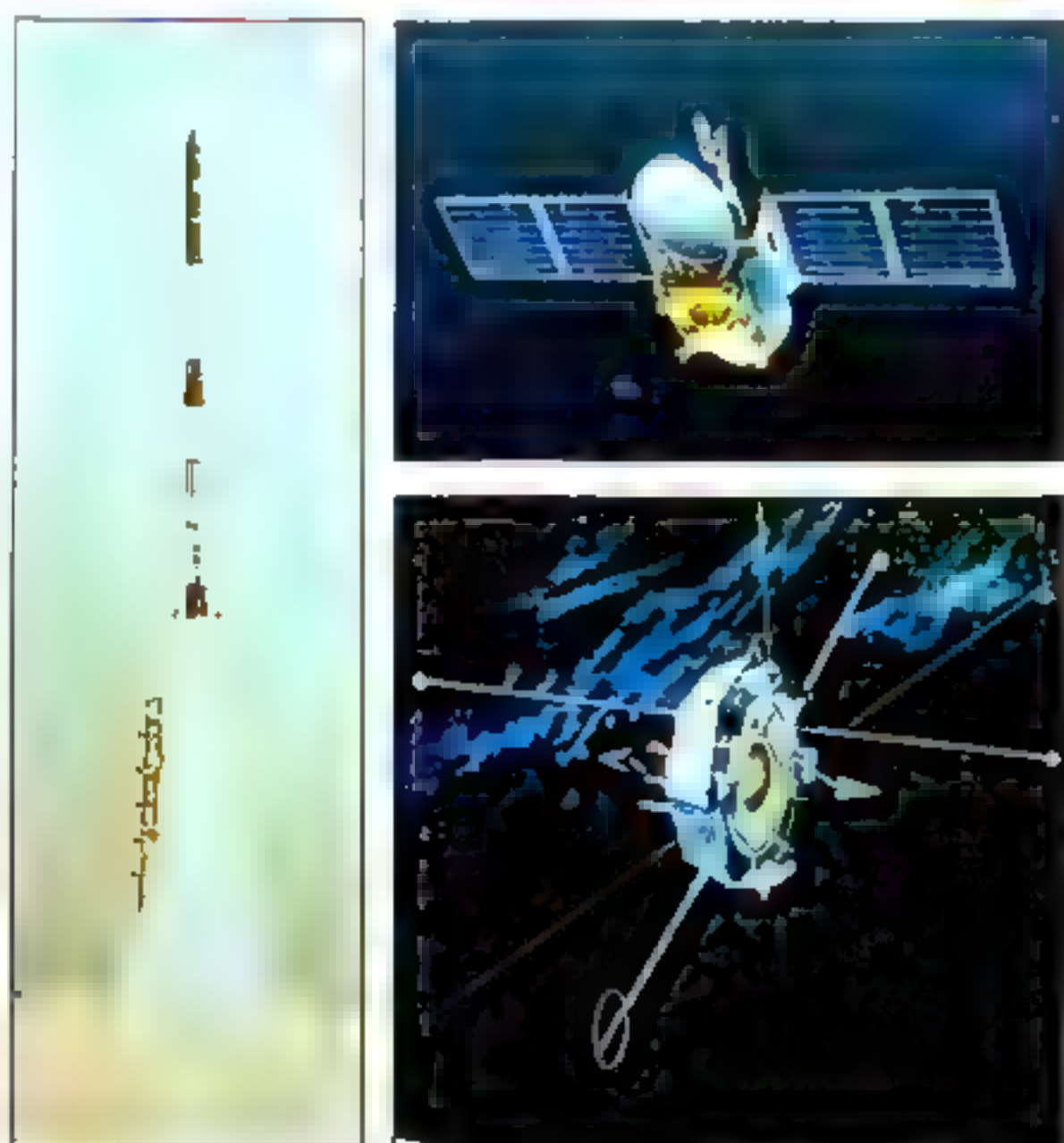


Faking Zero-G: Underwater

SPACE WORLD

March
1983
\$1.50

 Published in cooperation with
NATIONAL SPACE INSTITUTE



FOREIGN SPACE PROGRAMS

SPACE WORLD

April
1983
\$1.50

 Published in cooperation with
NATIONAL SPACE INSTITUTE



Will Space Science Move Up?

SPACE WORLD

May
1983
\$1.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



HOW IT WAS DONE

SPACE WORLD

June
July
1983
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE



Designing A Home in Space

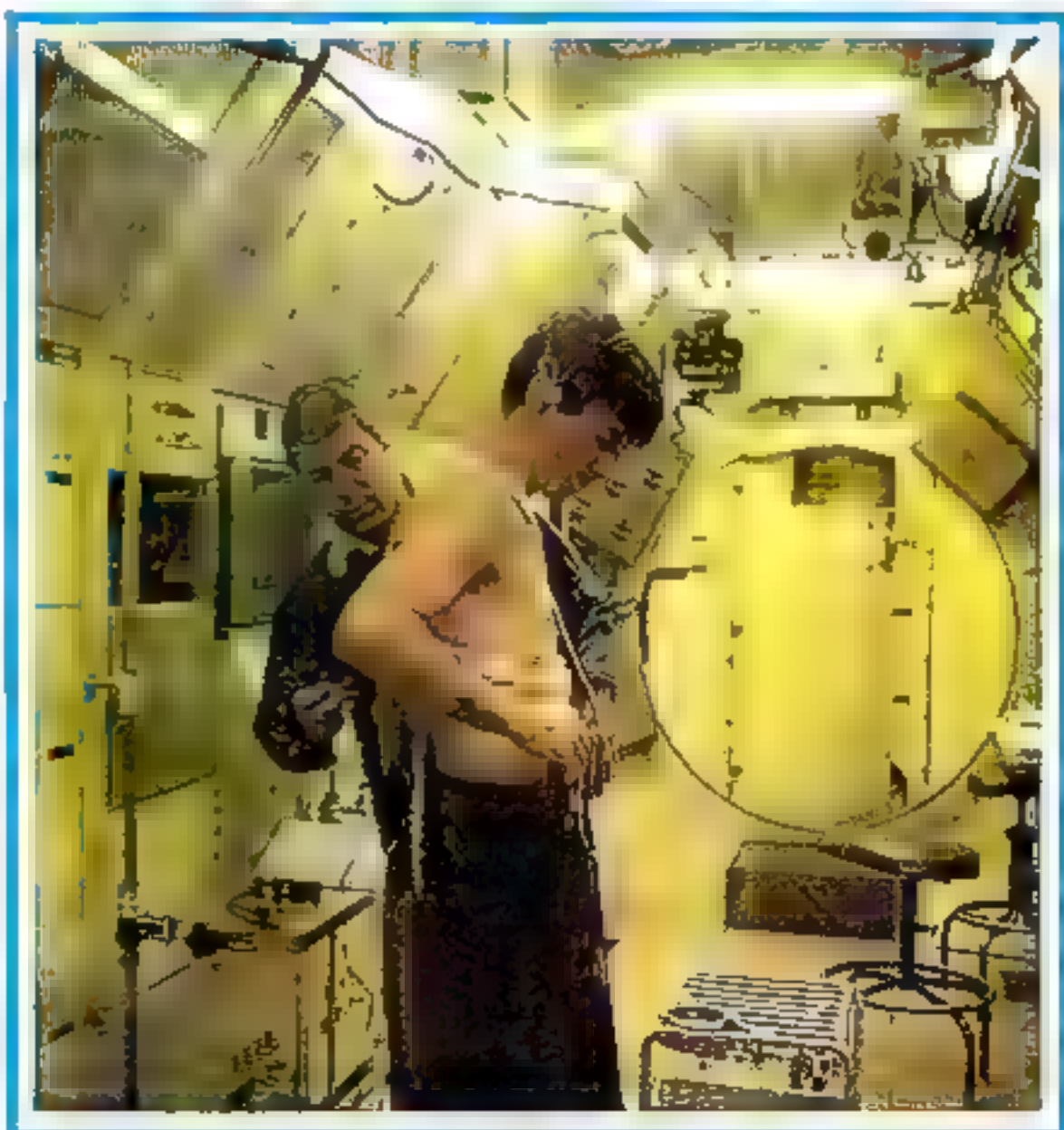
SPACE WORLD

August
September
1983
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE



Getting Ready for Spacelab 1

SPACE WORLD

October
1983
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE



25

National Aeronautics and
Space Administration
Twenty fifth Anniversary
1958-1983



Exploring Space With Balloons

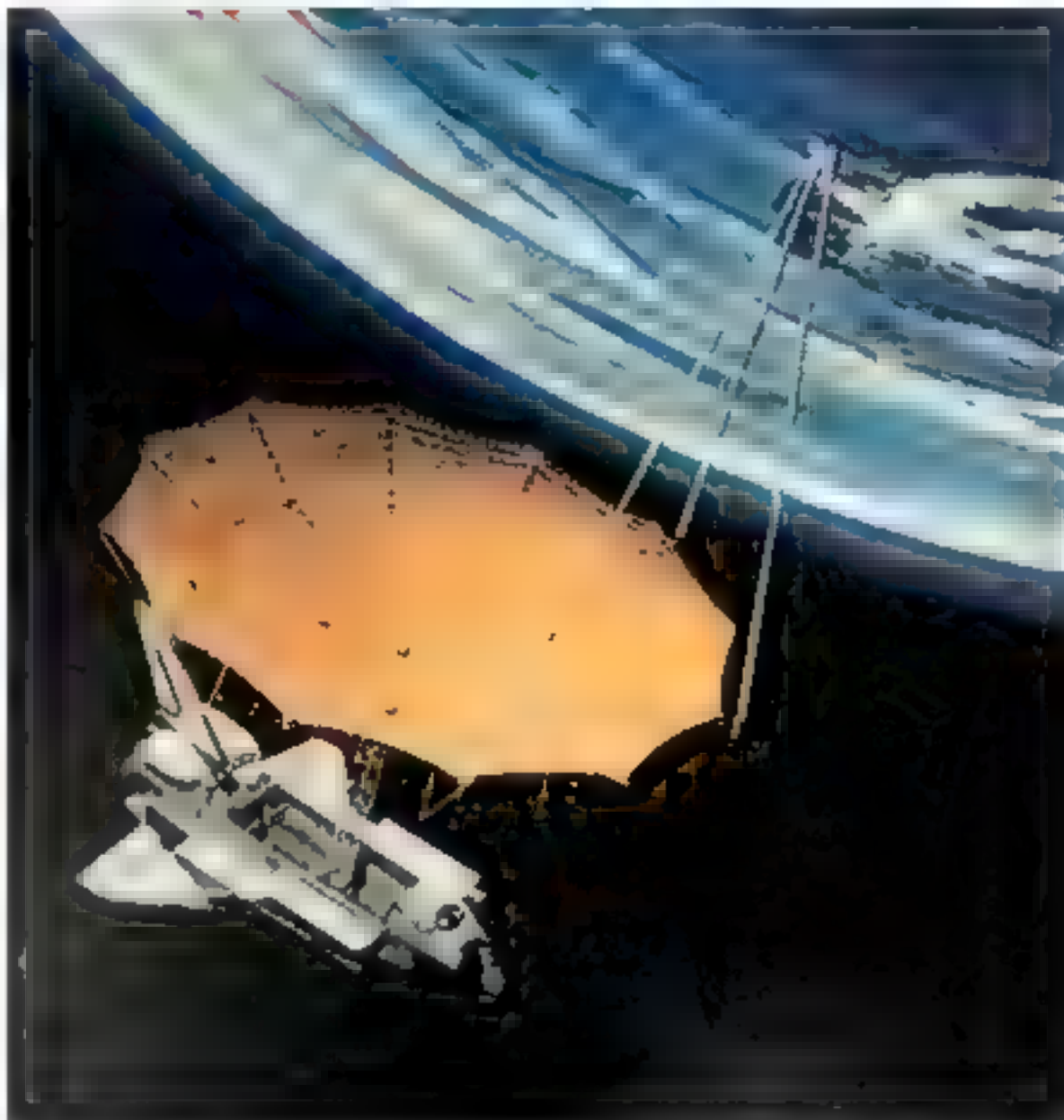
SPACE WORLD

November
1983
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE



Future U.S. Directions in Space

SPACE WORLD

December
1983
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE



Shuttle Derived Vehicles

**Note: In 1983 there were ten Space World magazines issued.
The June/July and the August/September are combined issues.**

SPACE WORLD

1984

SPACE WORLD

January
1984
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACESHIPS FOR HIRE

SPACE WORLD

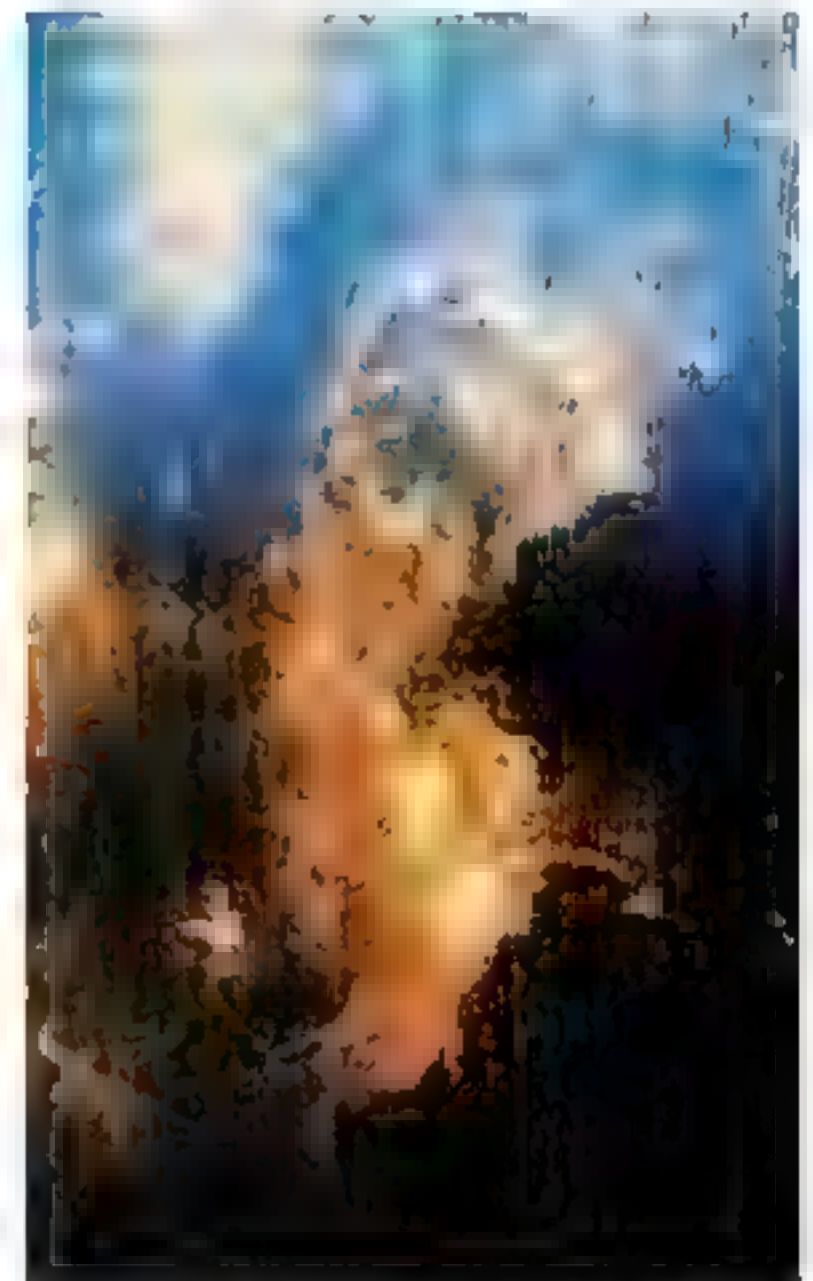
February
1984
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE

THE
I
N
F
R
A
R
E
D



UNIVERSE

SPACE WORLD

March
1984
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE



Sizing Up the Solar System

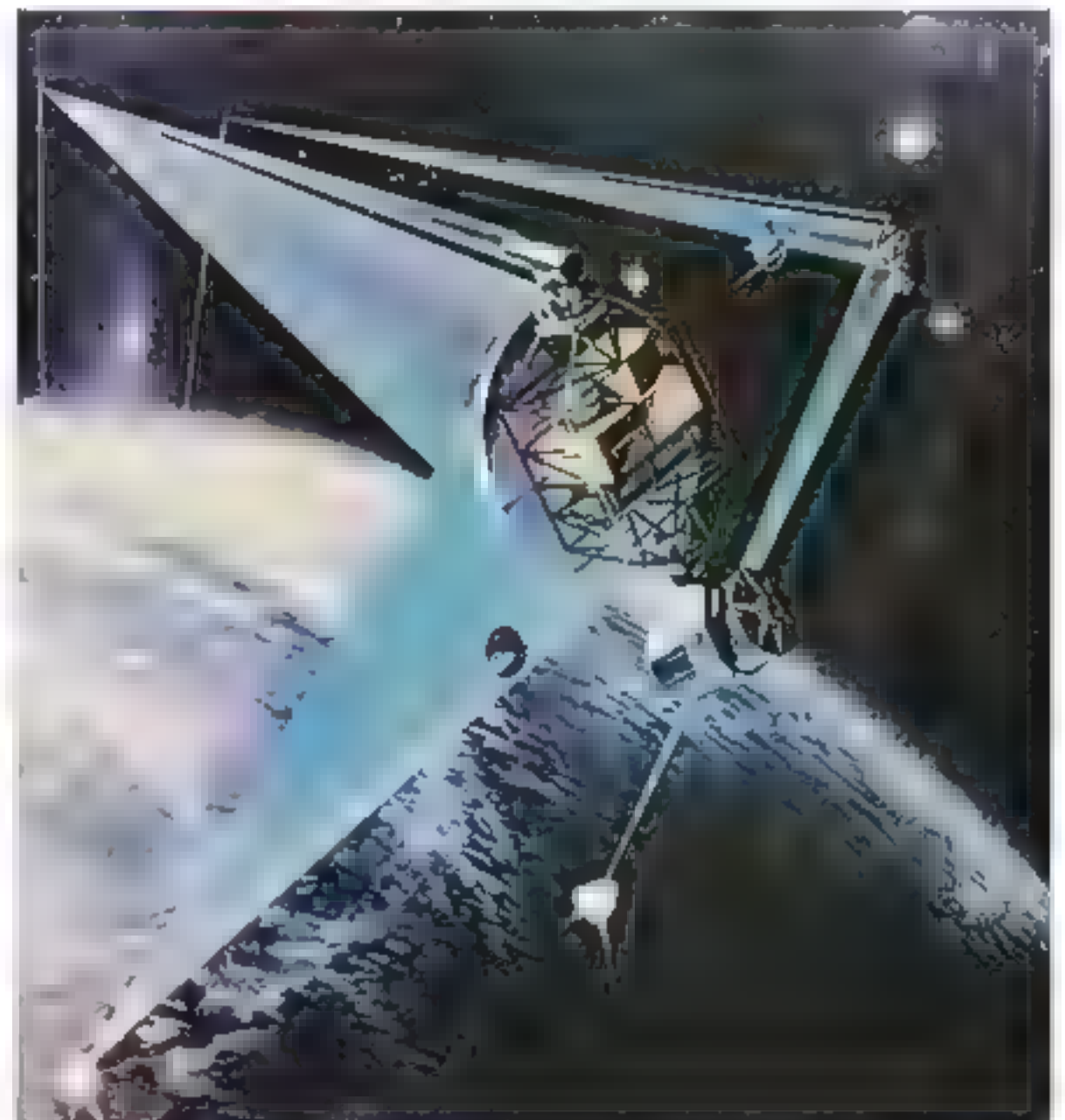
SPACE WORLD

April
1984
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE



Into The Wild Black Yonder

SPACE WORLD

May
1984
\$1.75



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

June
1984
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



Halley Nears Earth

SPACE WORLD

July
1984
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE

SPECIAL REPORT:

America's Return to the Moon



SPACE WORLD

August
1984
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



Sharing The Grand Strategy

SPACE WORLD

September
1984
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



Mars: Blueprint For A Red Planet

SPACE WORLD

October
1984
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



INTELSAT's Orbital Switchboard

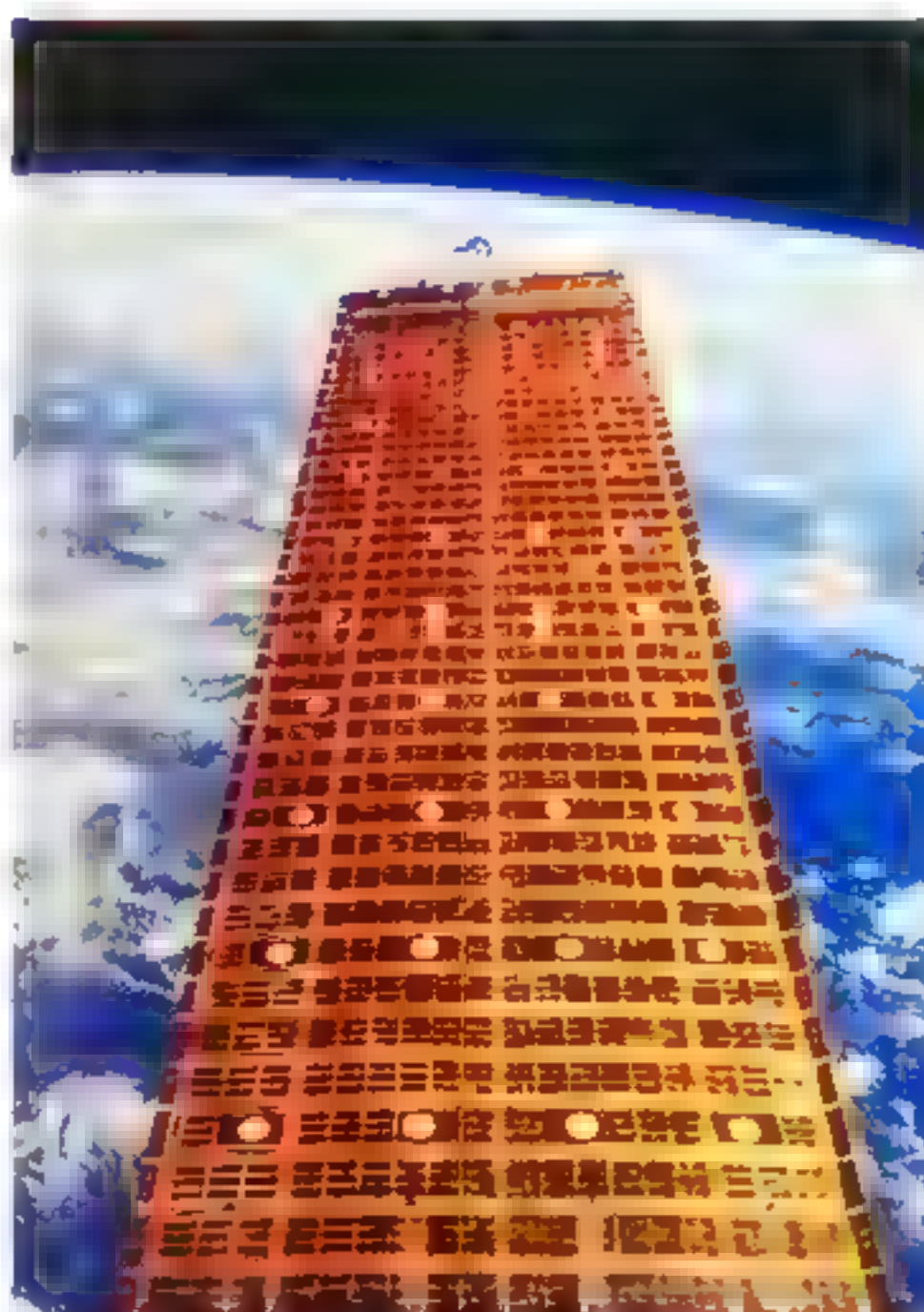
SPACE WORLD

November
1984
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



CATCHING THE SUN

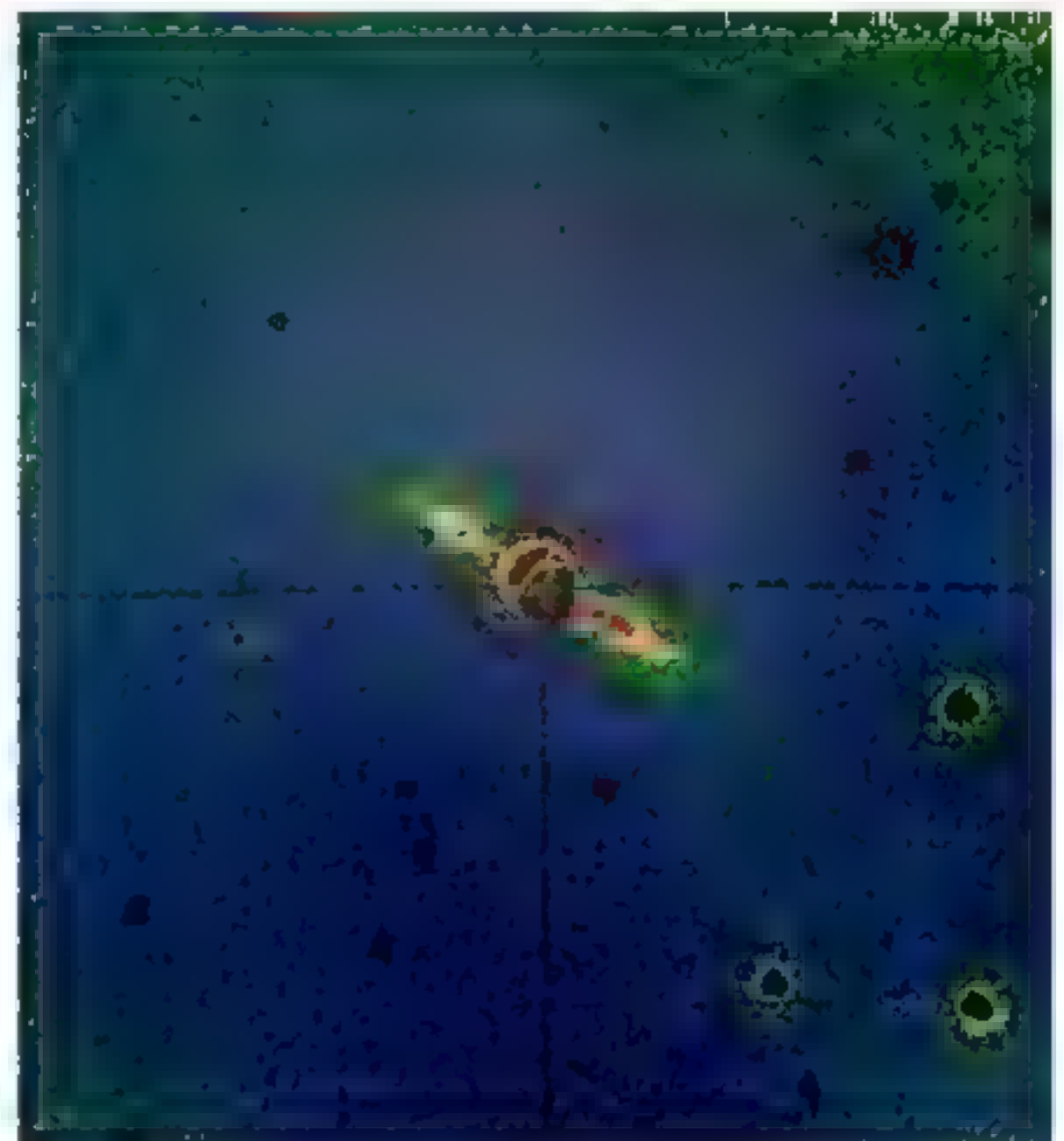
SPACE WORLD

December
1984
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

1985

SPACE WORLD

January
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

February
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

March
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

April
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

May
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

June
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



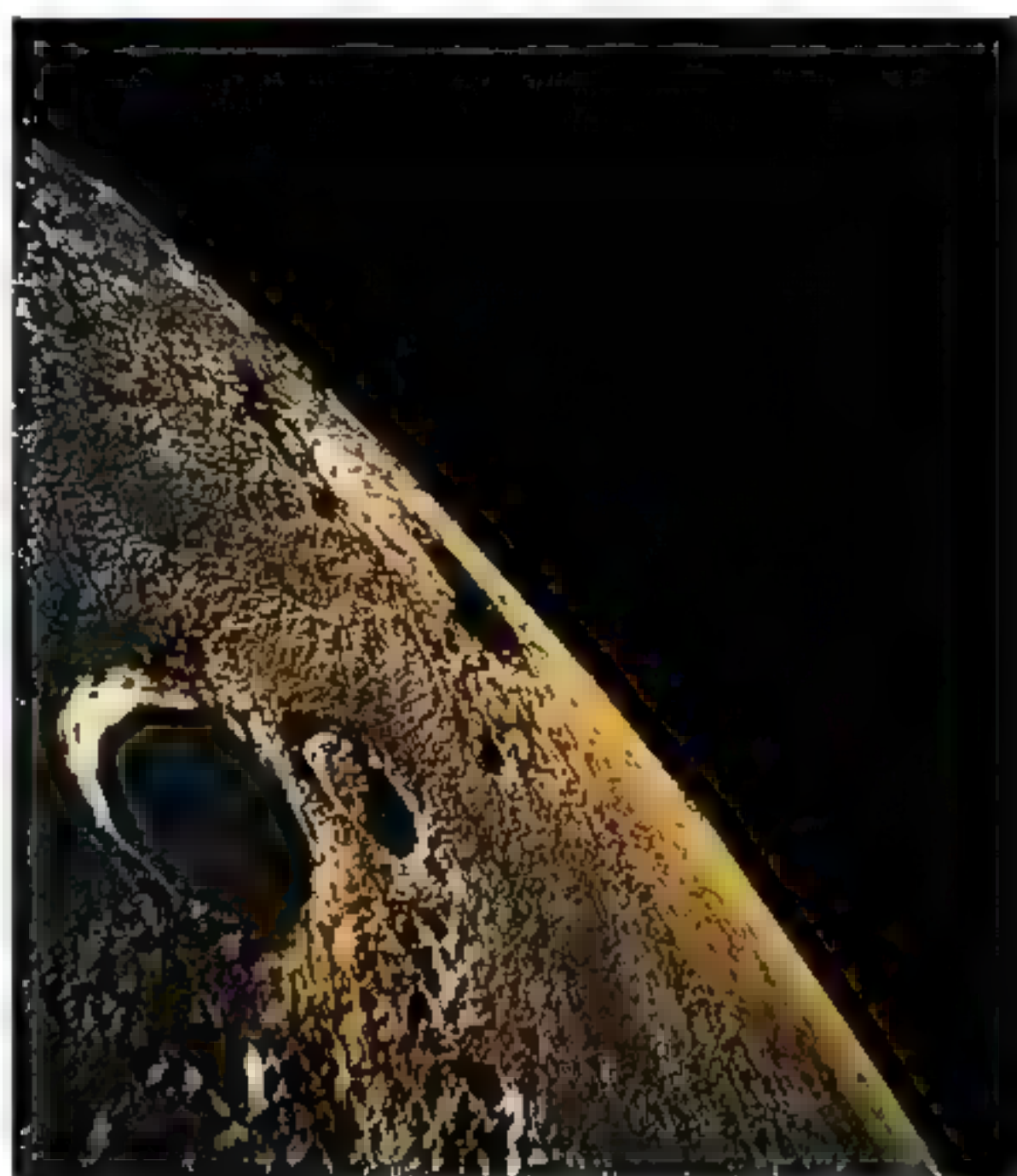
SPACE WORLD

July
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

August
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

September
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



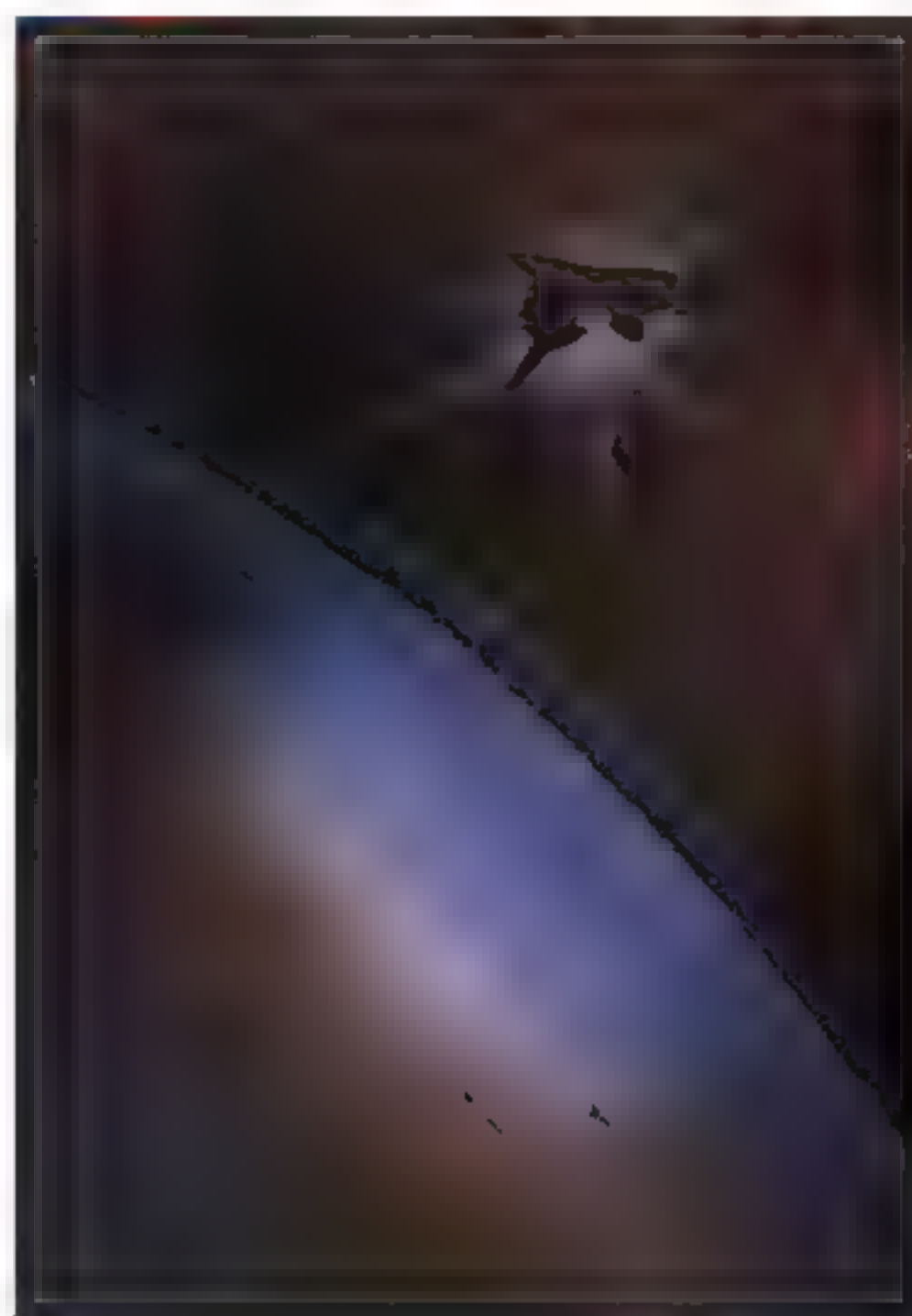
SPACE WORLD

October
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



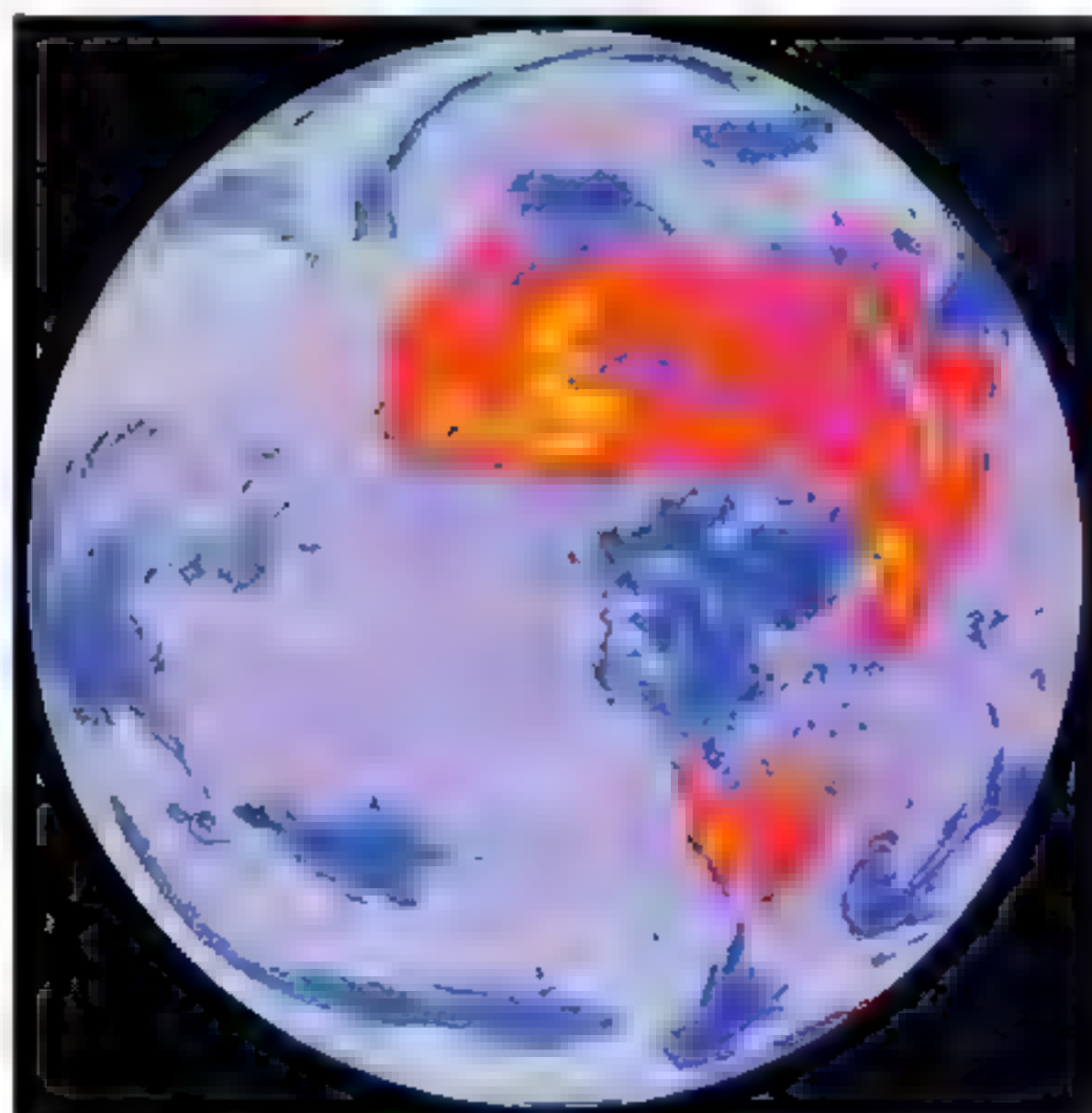
SPACE WORLD

November
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

December
1985
\$2.50



Published in cooperation with

NATIONAL SPACE INSTITUTE



SPACE WORLD

1986

SPACE WORLD

January 1995

\$2.50

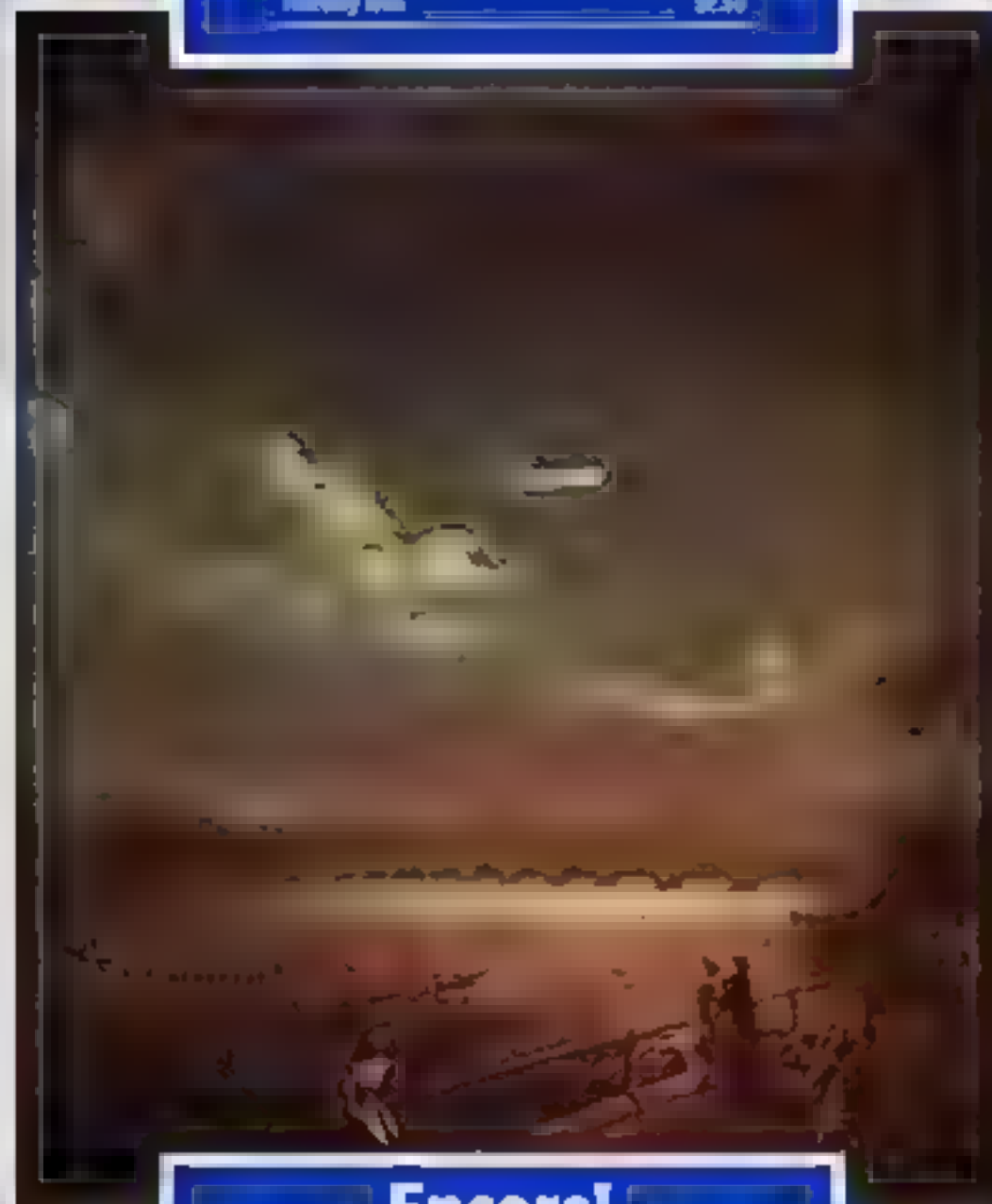


Hello ???

SPACE WORLD

February 1995

\$2.50

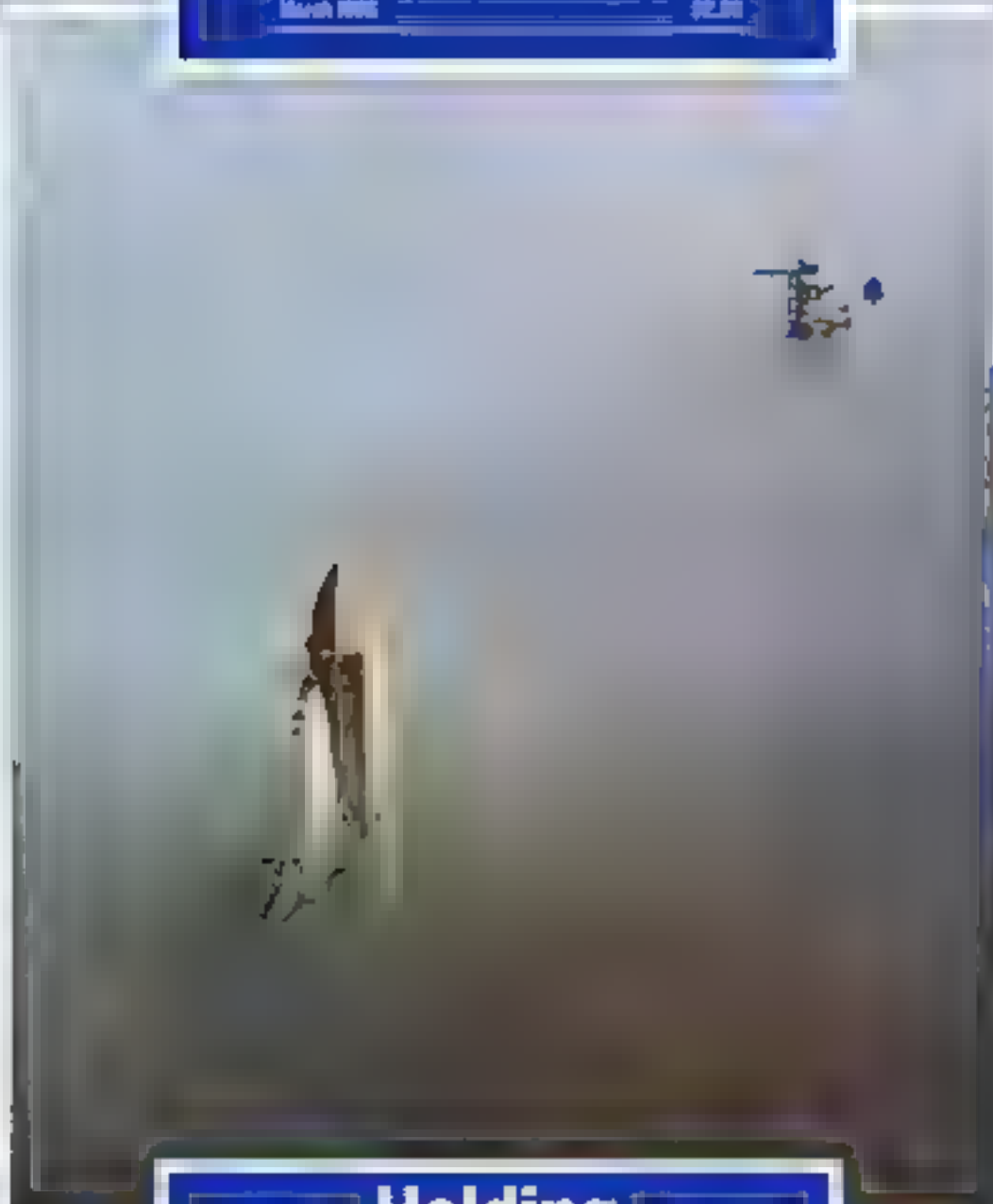


Encore!

SPACE WORLD

March 1995

\$2.50



Holding

SPACE WORLD

April 1995

\$2.50

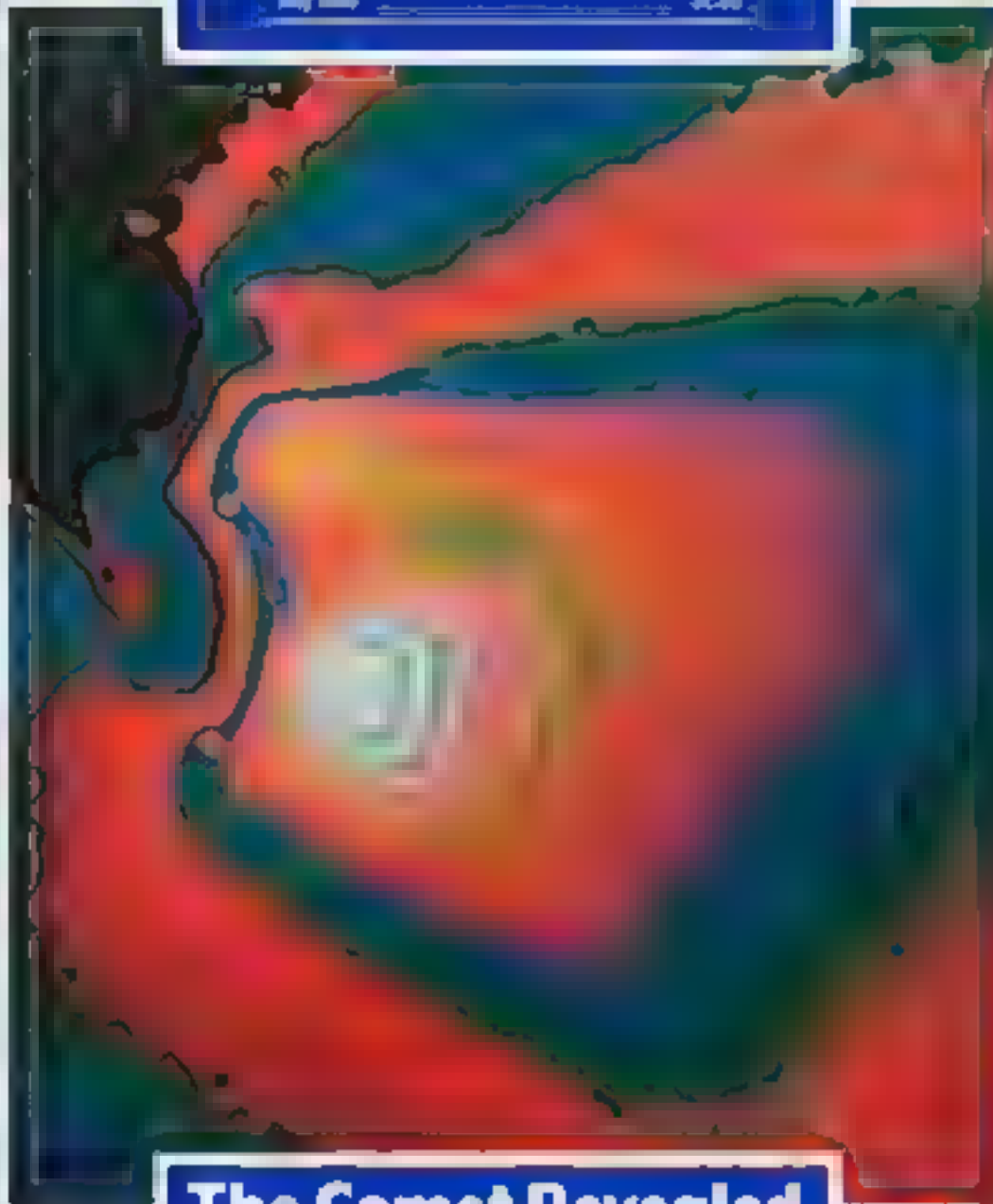


The First

SPACE WORLD

May 1985

\$2.50

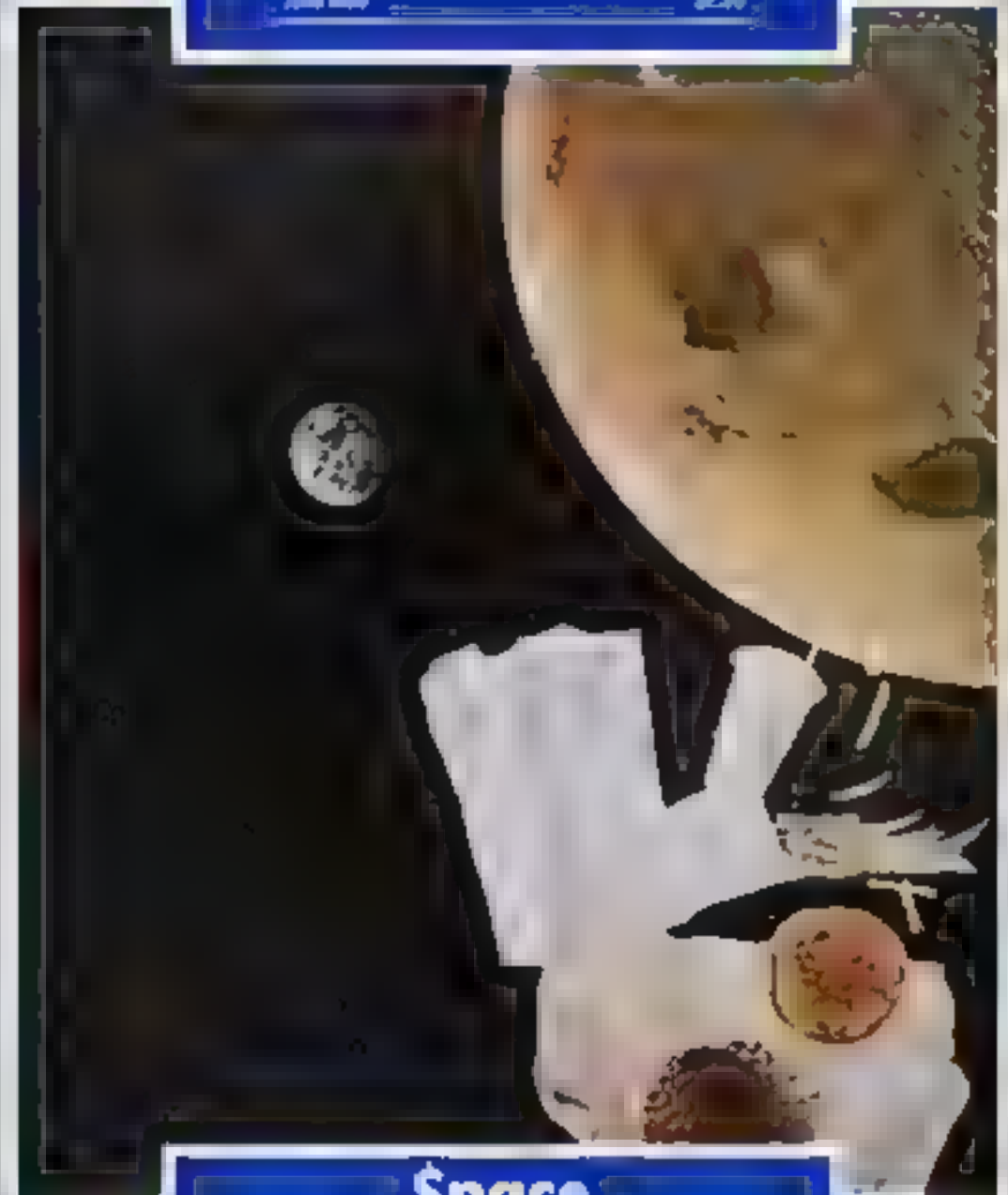


The Comet Revealed

SPACE WORLD

June 1985

\$2.50



Space

SPACE WORLD

July 1985

\$2.50



Still Waiting

SPACE WORLD

August 1985

\$2.50



Astro Power

SPACE WORLD

September 1988

\$2.50



Galactic Voyage

SPACE WORLD

October 1988

\$2.50

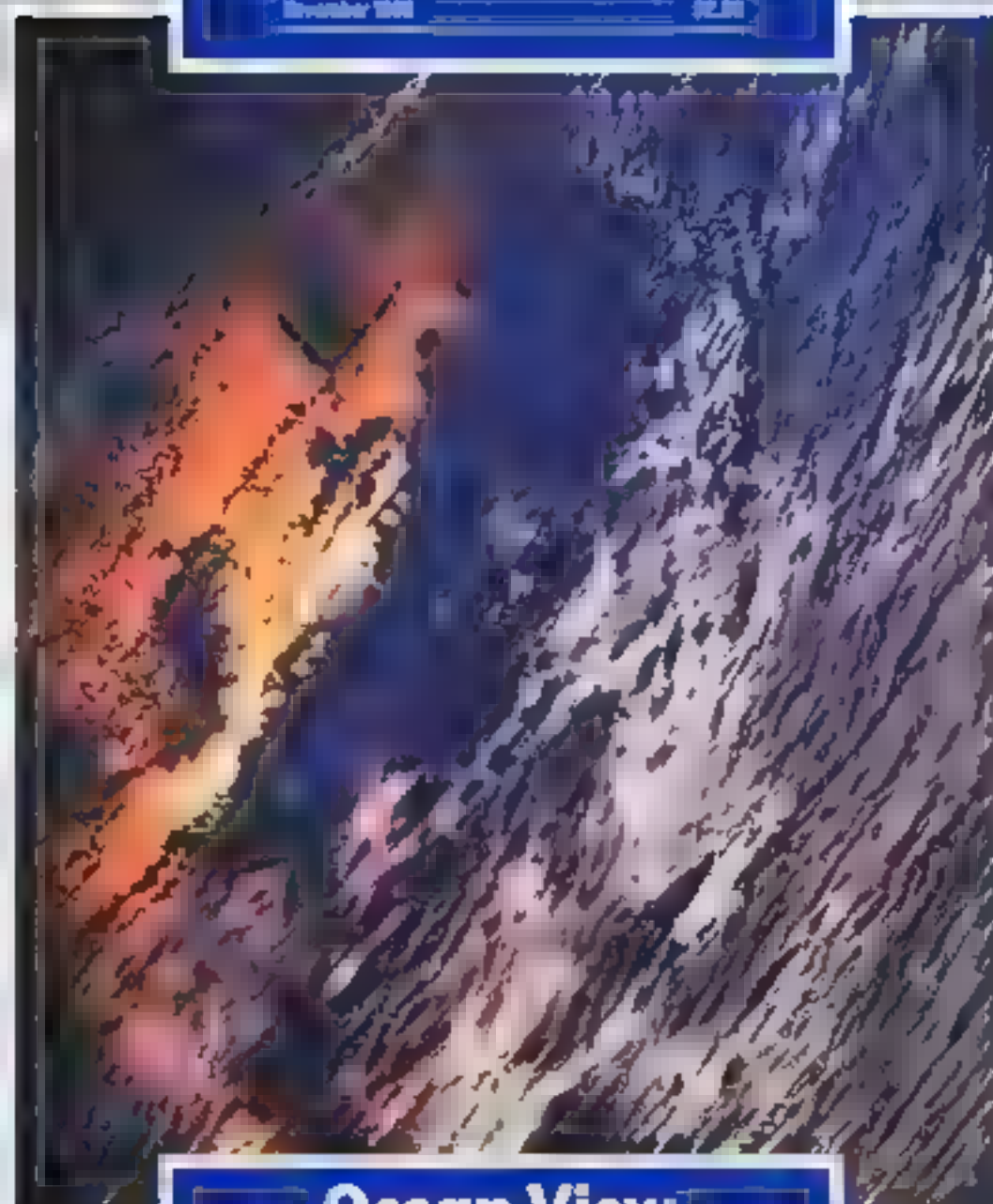


Seller's Market

SPACE WORLD

November 1988

\$2.50

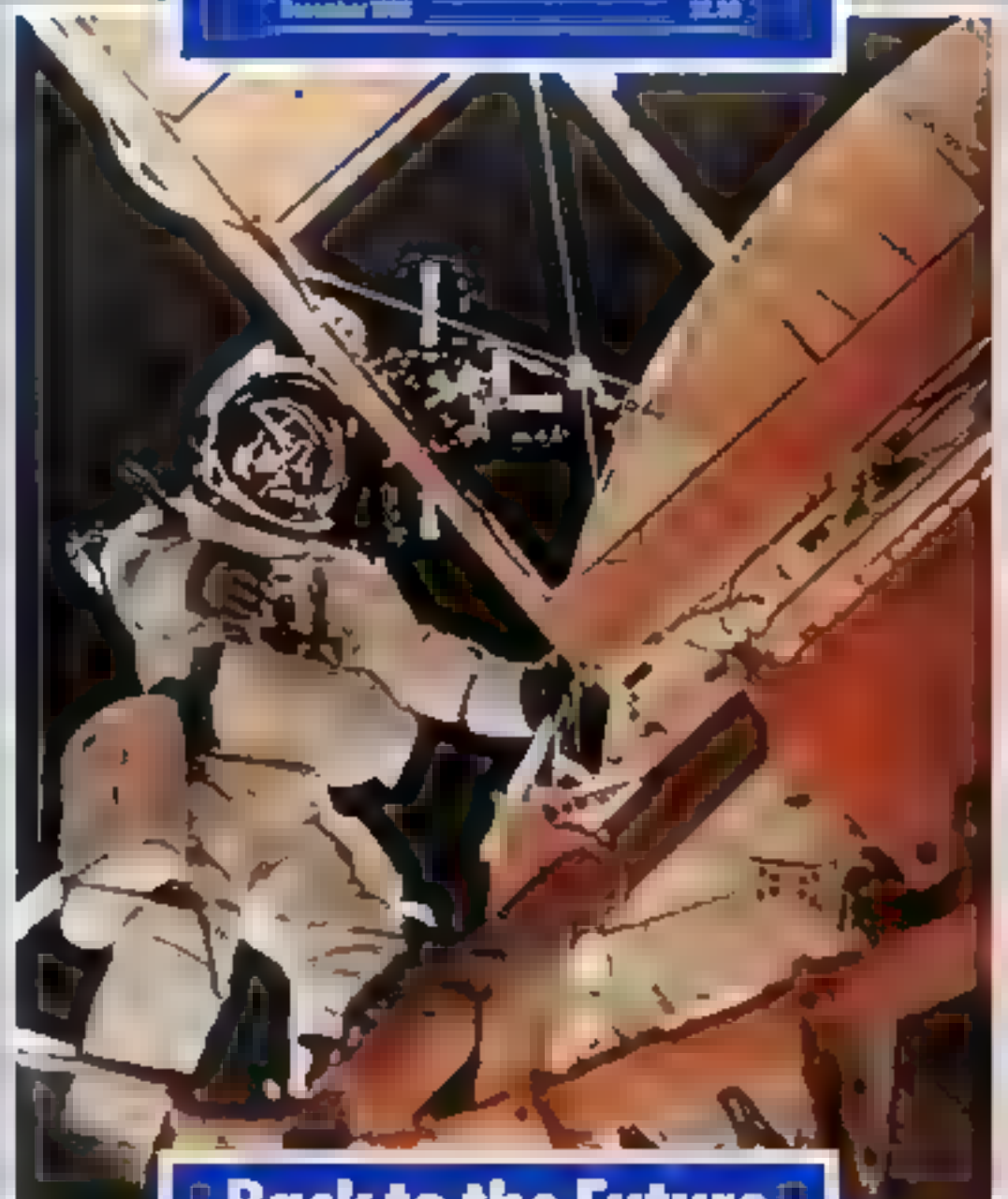


Ocean View

SPACE WORLD

December 1988

\$2.50



Back to the Future

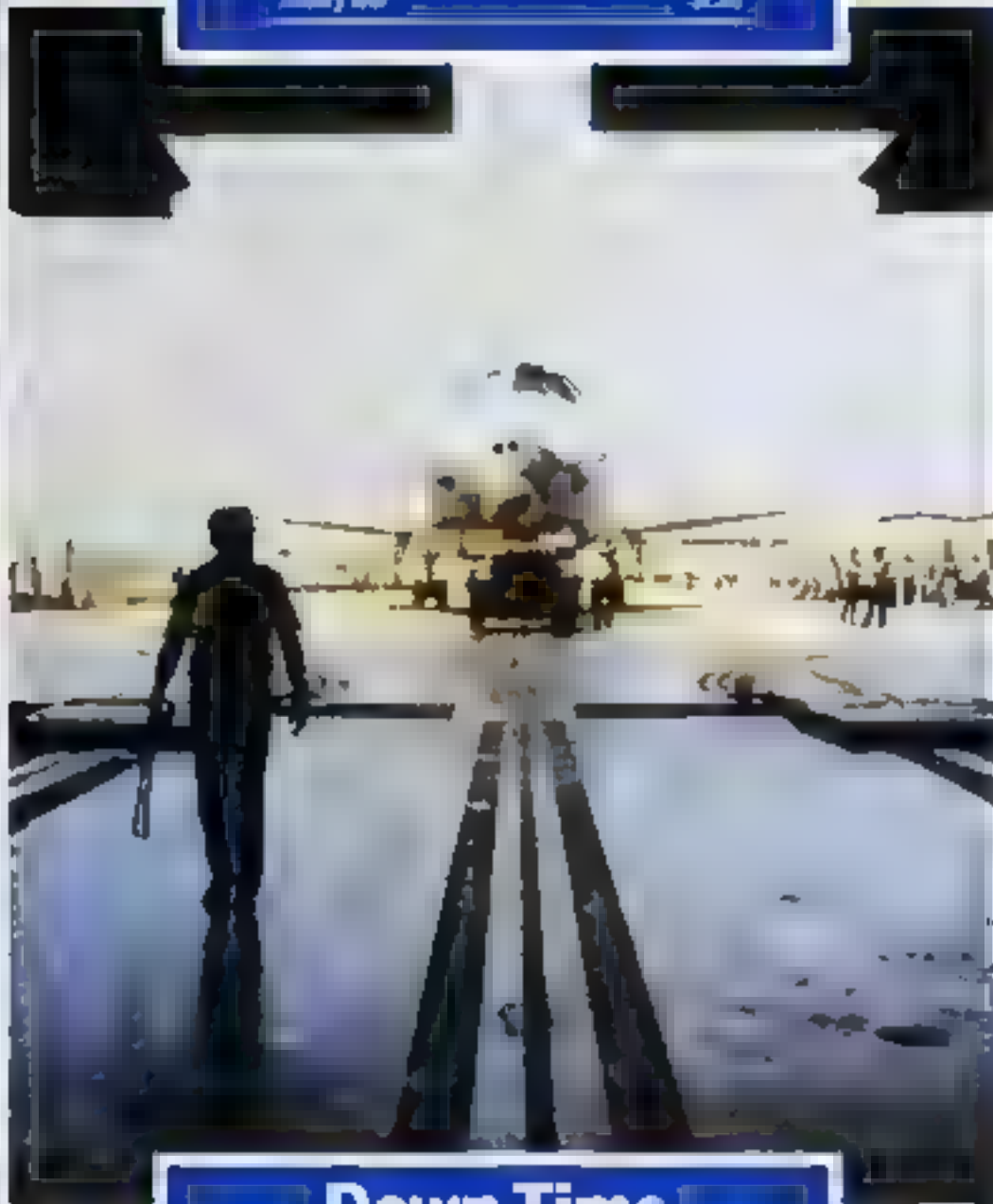
SPACE WORLD

1987

SPACE WORLD

January 1987

\$2.50



Down Time

SPACE WORLD

February 1987

\$2.50



Full Spectrum

SPACE WORLD

March 1987

\$2.50

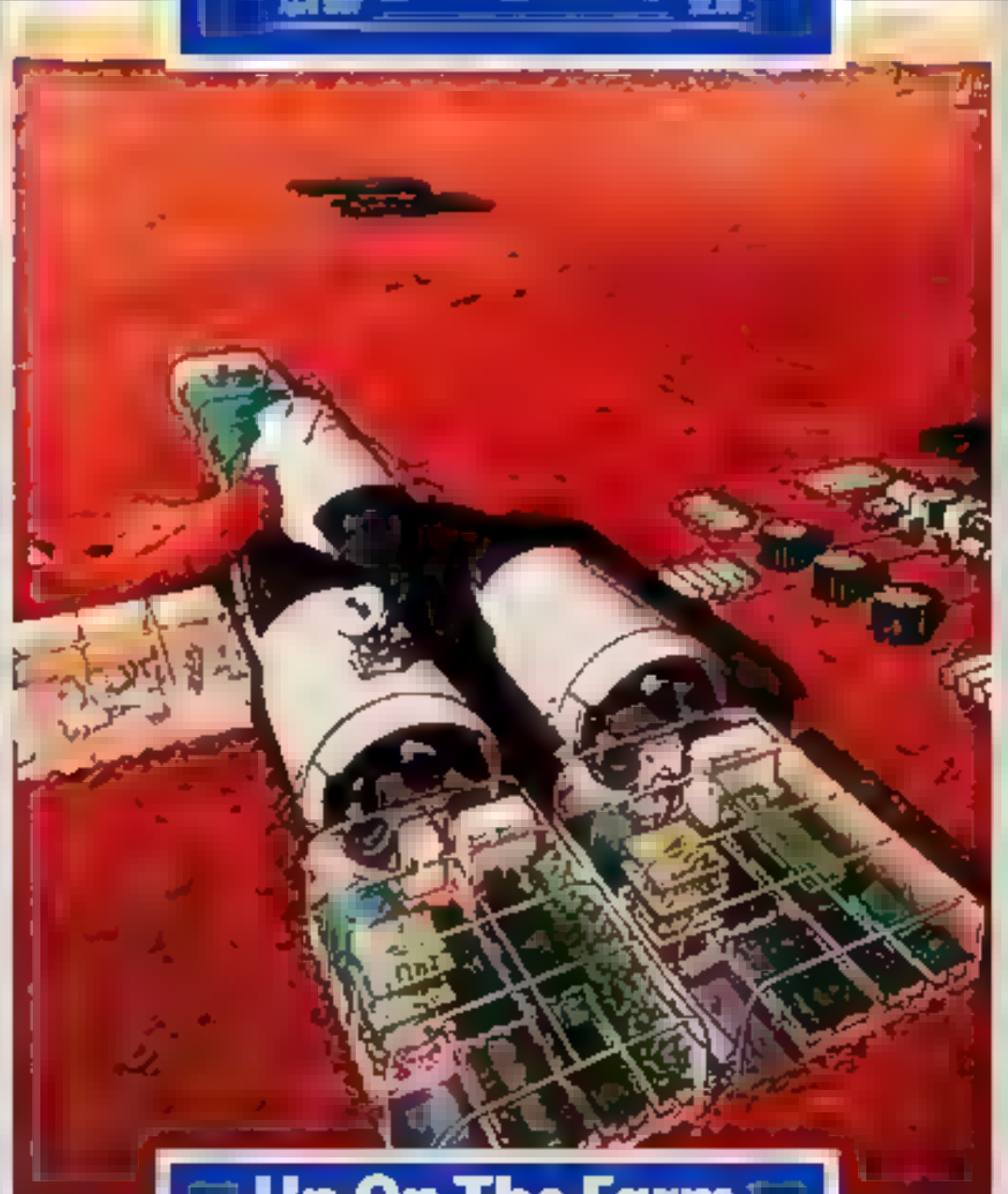


Doctor on Board

SPACE WORLD

April 1987

\$2.50



Up On The Farm

SPACE WORLD

May 1997

\$2.50



1996?

SPACE WORLD

June 1997

\$2.50

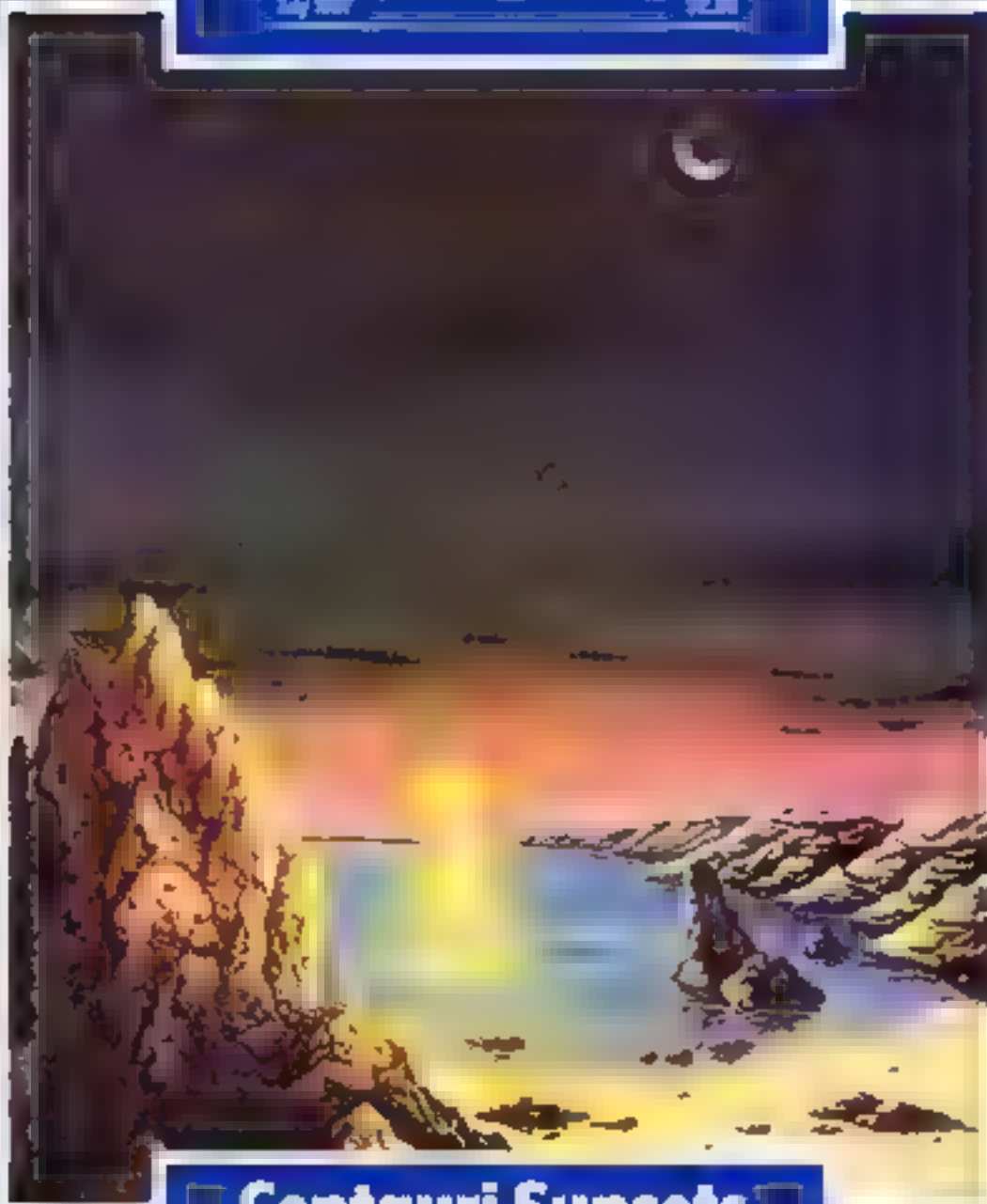


Patience

SPACE WORLD

July 1997

\$2.50



Centauri Sunsets

SPACE WORLD

August 1997

\$2.50

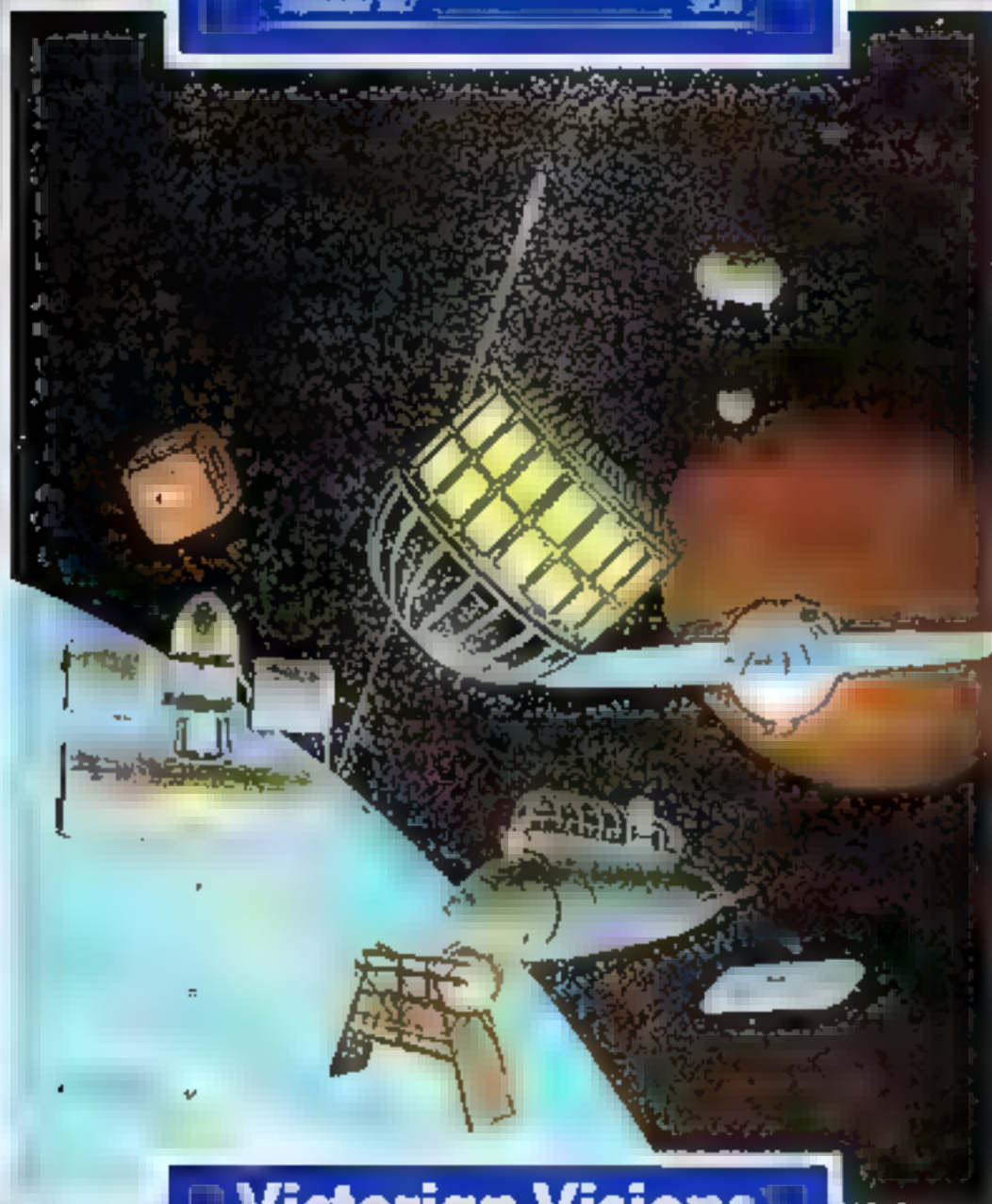


Escaping Acts

SPACE WORLD

September 1987

\$2.50

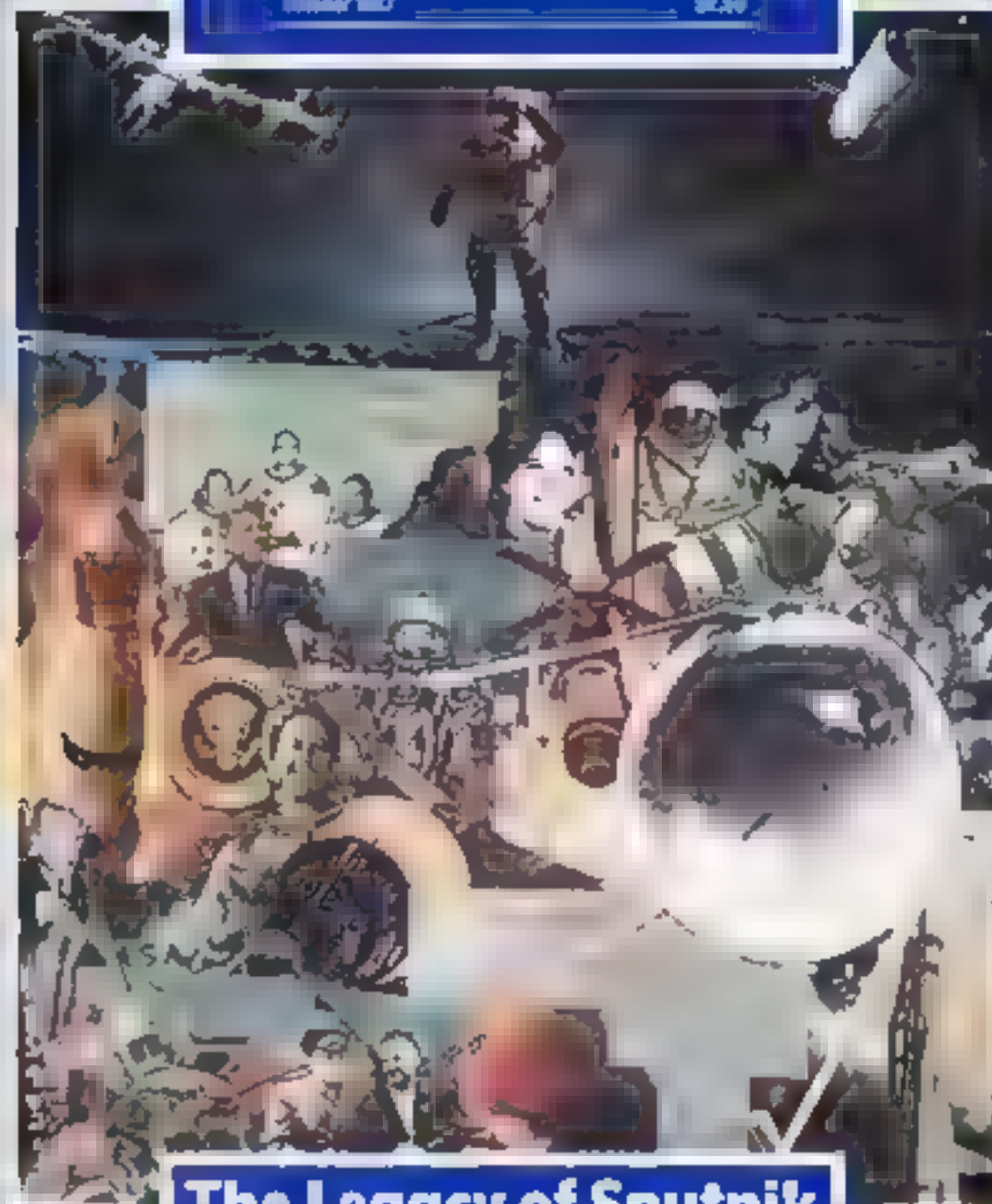


Victorian Visions

SPACE WORLD

October 1987

\$2.50



The Legacy of Sputnik

SPECIAL
ISSUE

SPACE WORLD

November 1987

\$2.50



The Class of '87

SPACE WORLD

December 1987

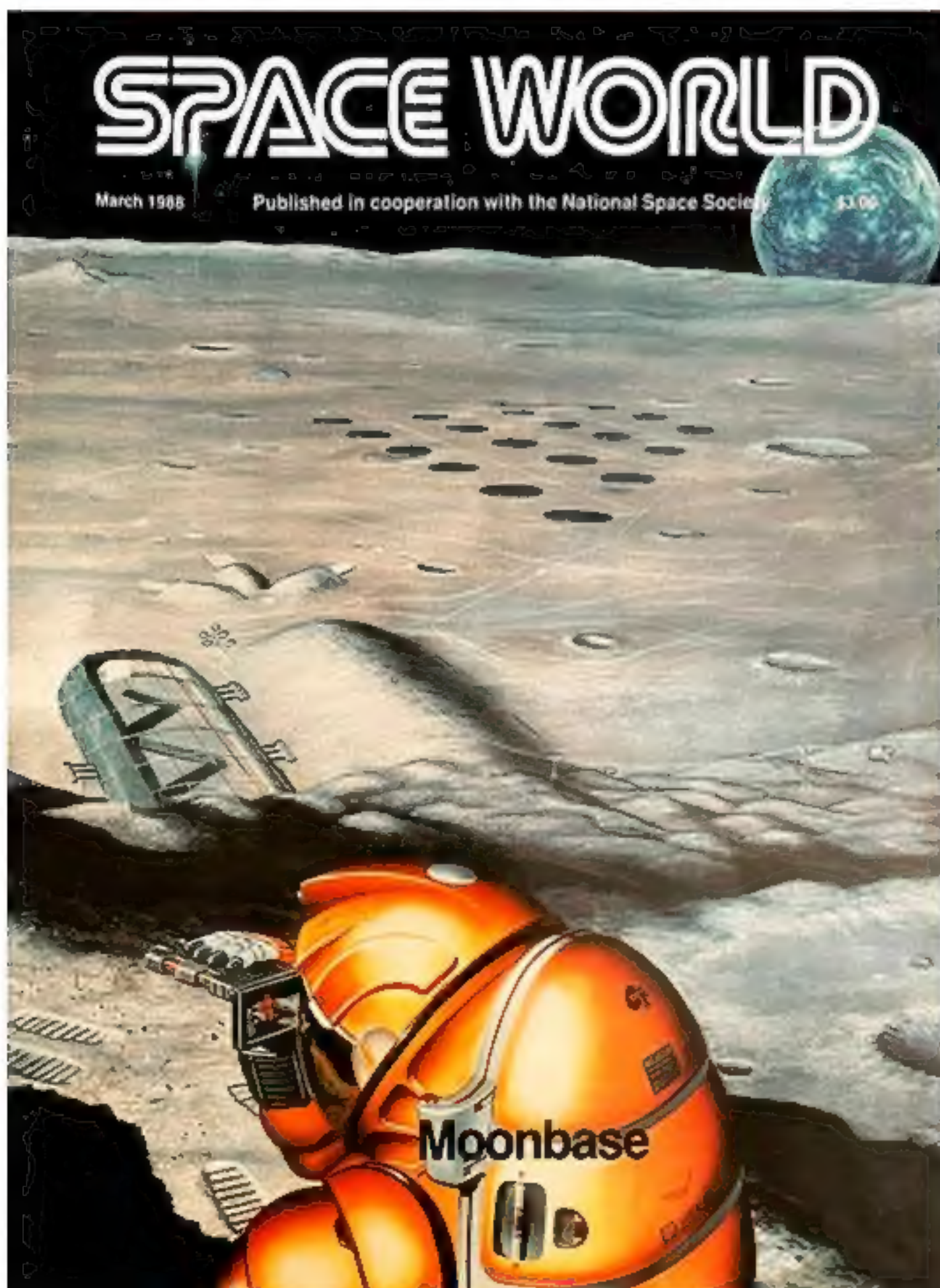
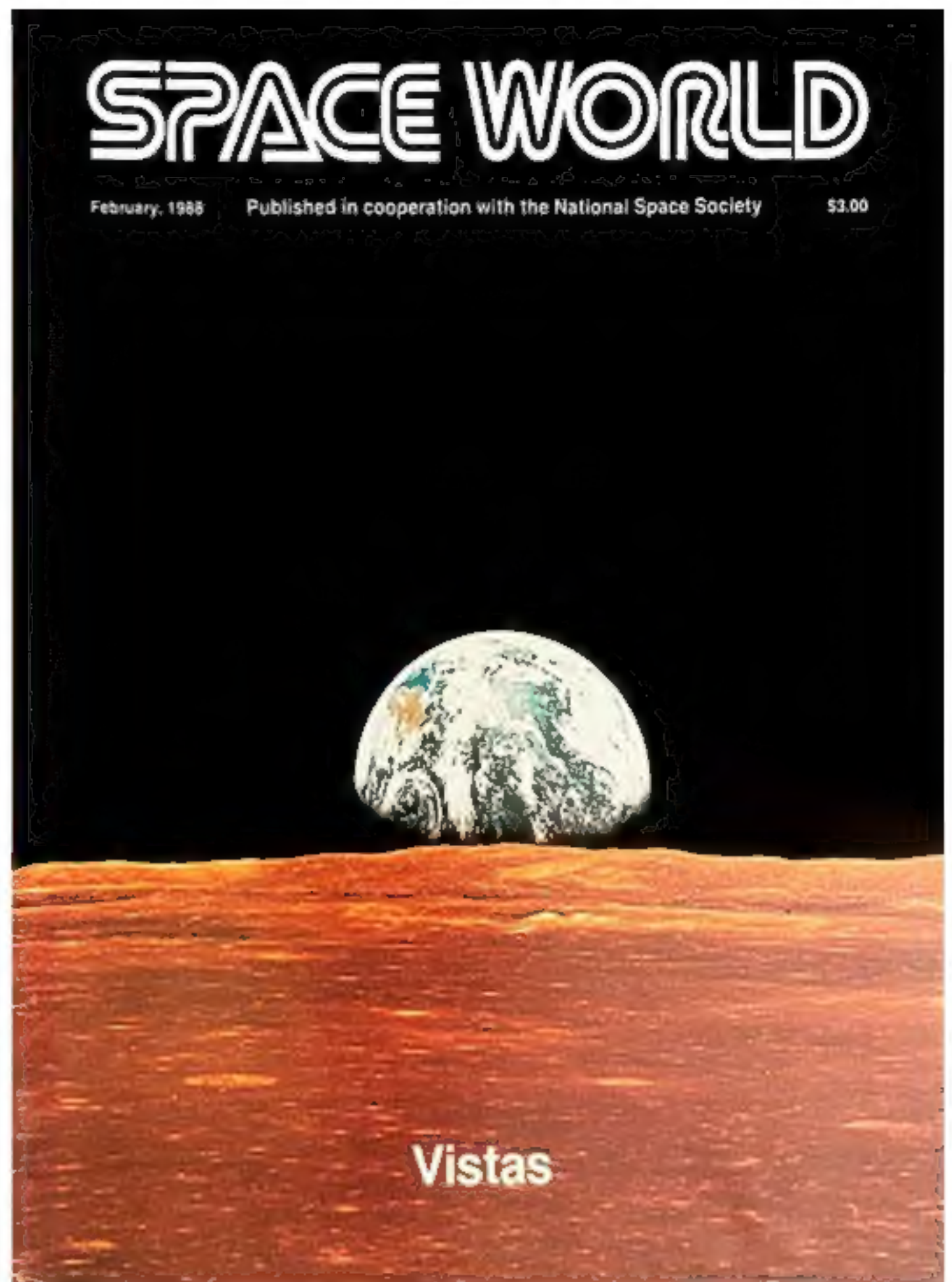
\$2.50

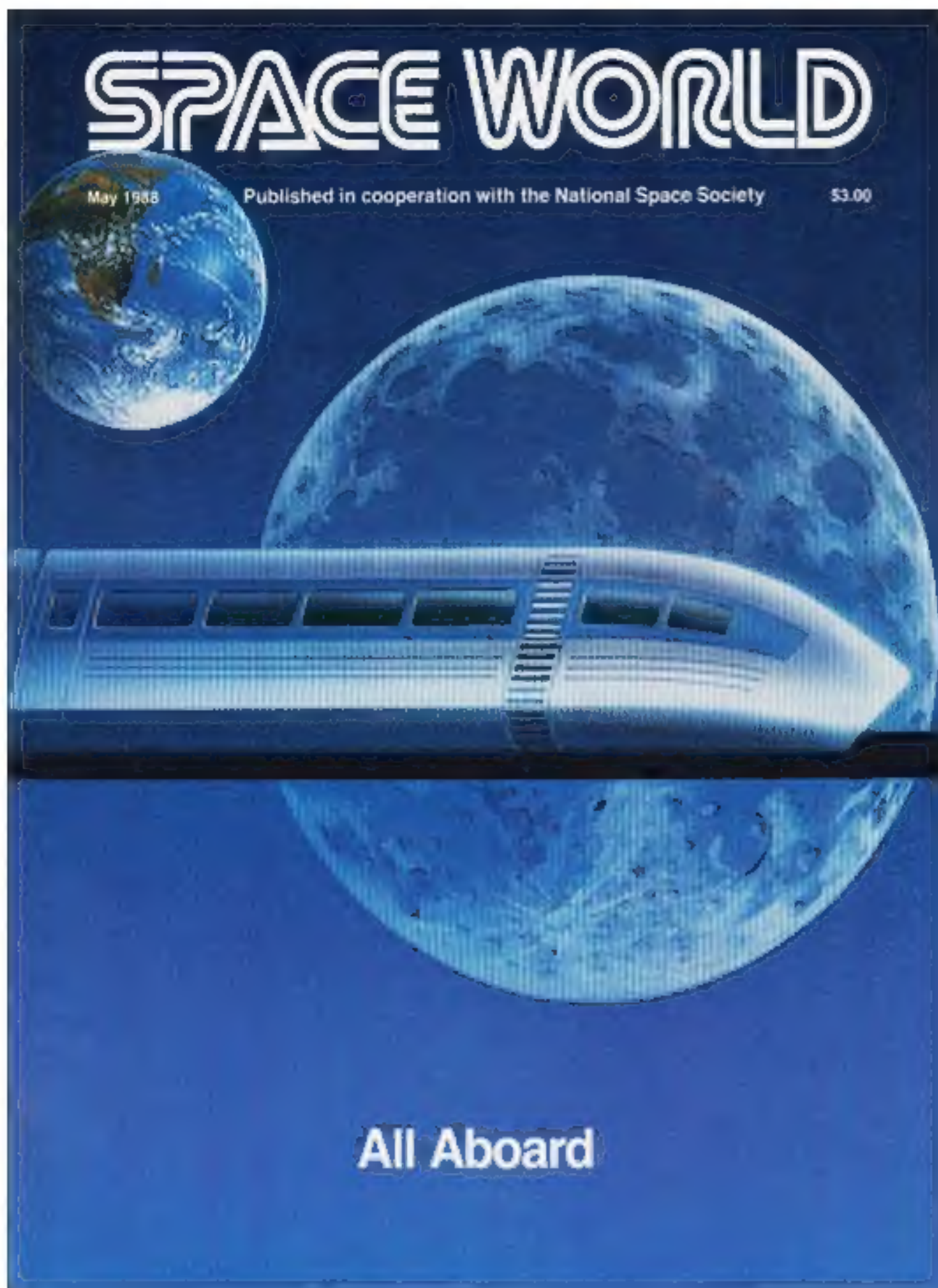


Opportunities

SPACE **WORLD**

1988





SPACE WORLD

September 1988

Published in cooperation with the National Space Society

\$3.00

Return to Flight?

SPACE WORLD

October 1988

Published in cooperation with the National Space Society

\$3.00

Pathfinder

SPACE WORLD

November 1988

Published in cooperation with the National Space Society

\$3.00

Women In Space

SPACE WORLD

December 1988

Published in cooperation with the National Space Society

\$3.00

Astronaut's Advice